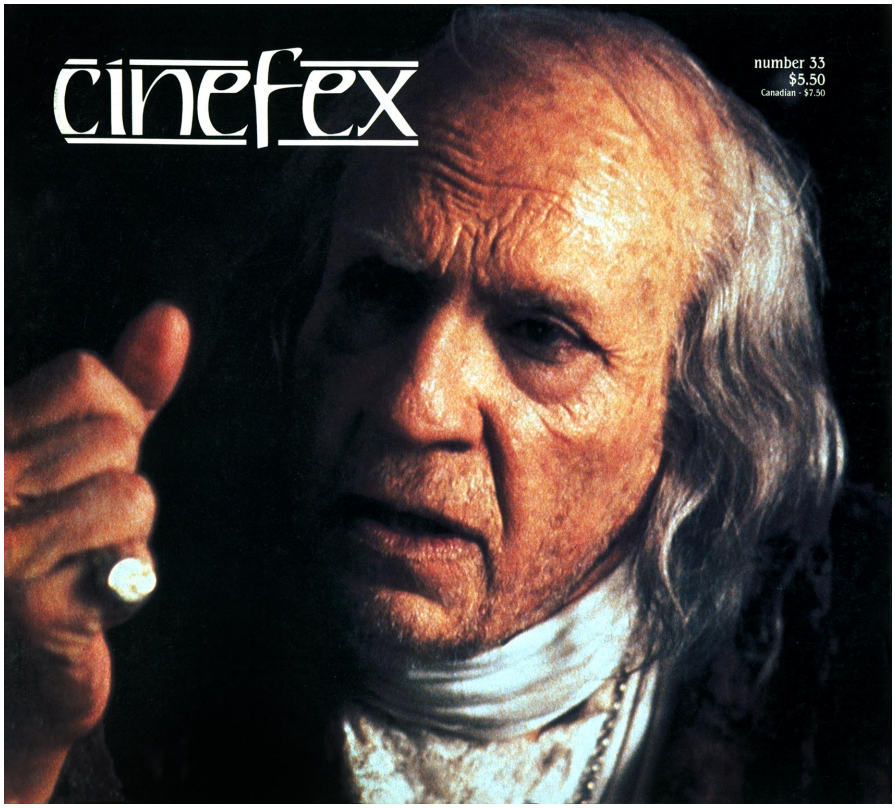
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007 x 4 — John Richardson 4

In four of the last five James Bond adventures, special effects supervisor John Richardson has acted as an off-camera 'Q' to the indomitable 007 — engineering a speedboat chase over a waterfall in *Moonraker*, flying a minijet through an aircraft hangar in *Octopussy*, snaring a blimp on the Golden Gate Bridge in *A View to a Kill* and staging a massive ground and air battle in *The Living Daylights*. Eschewing opticals in favor of full-scale physical effects or cleverly integrated miniatures, Richardson has earned a reputation worldwide as an effects artisan of consummate ingenuity and skill. *Article by Nora Lee.*

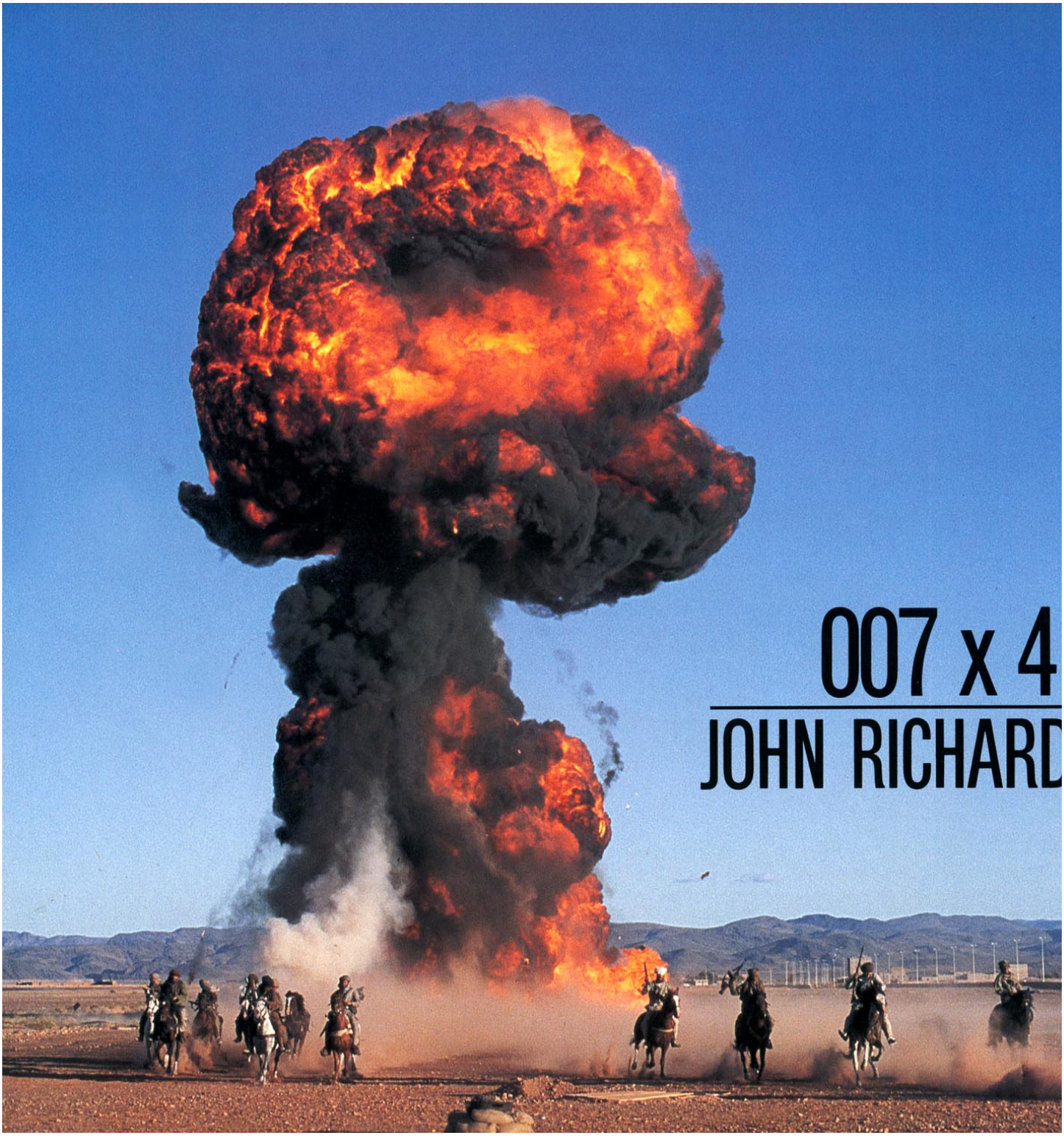
Aging Gracefully with Dick Smith 24

When a film script calls for an actor to age, one name comes quickly to mind — Dick Smith. In a celebrated career that has spanned more than forty years, Smith has designed and executed aging makeups for such classic films as *Little Big Man*, *The Godfather*, *The Exorcist* and *Amadeus*. Smith discusses in detail the evolution of old age makeup and gives an anecdotal account of his experiences adding years and decades to such motion picture notables as Dustin Hoffman, Marlon Brando and Walter Matthau. *Article by Jody Duncan Shannon.*

Predator Revealed 52

When producer Joel Silver went to R/Greenberg Associates with a script that called for an extraterrestrial being capable of rendering itself virtually invisible in the jungle, the challenge of creating such an effect — and others including its thermographic vision — was eagerly accepted. By employing a red creature suit to generate mattes and a laborious optical technique for creating a multifaceted quasi-invisible figure, visual effects supervisor Joel Hynek and his crew were able to successfully render the alien in visual terms that were both effective and unique. *Article by Paul Mandell.*

FRONT COVER — Salieri confesses his envy and hatred of Mozart in *Amadeus*. An extraterrestrial big game hunter seeks human prey in *Predator* — BACK COVER.

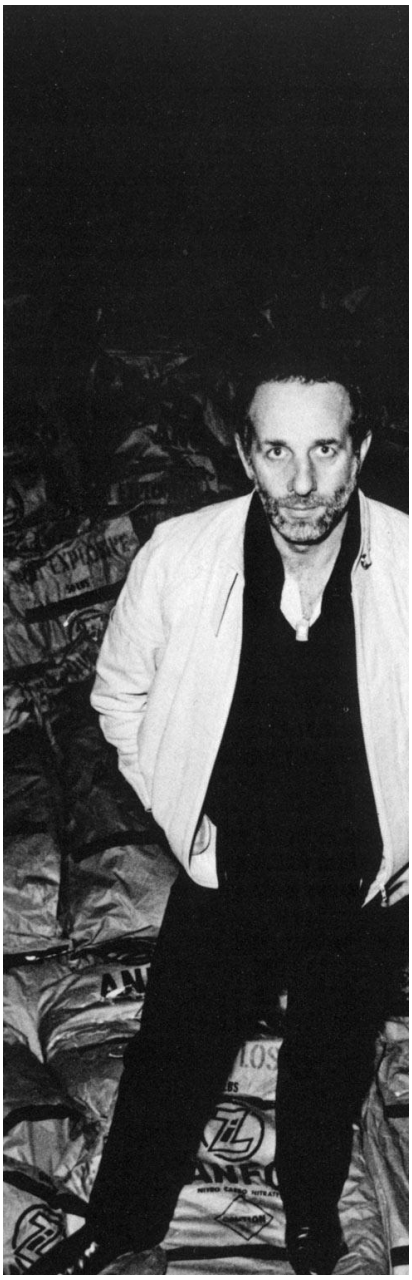

007 x 4
JOHN RICHARD

copter would fly up and away and I would act as the link so the boat could be dragged clear of the rock. As soon as the boat was clear, it would go over the edge and I could just let go." Even when Richardson made contact with the boat, however, there was a problem in that the craft weighed over a ton. It was only a dummy; but since the original idea had been to employ an air cannon to propel it over the falls, this particular dummy had a steel shaft built inside it. When plans changed and the heavy tube was no longer needed, there was neither the time nor the wherewithal to remove it.

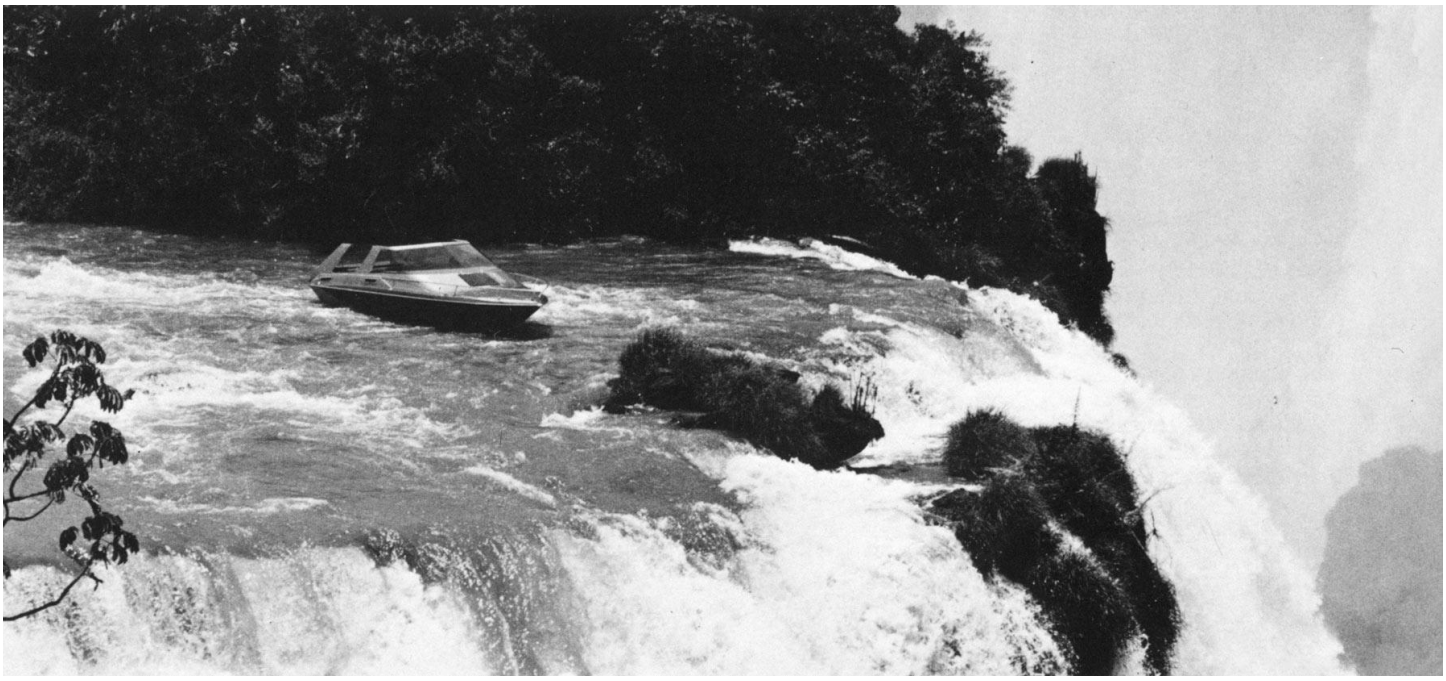
"I checked all the lines and the hooks from the helicopter and the harness that I was wearing before we took off. Once I got hold of the boat and the helicopter started to fly up and away there was no way I was going to let go of the boat! I'd got it, and I was so hyped up by this time to get rid of the bloody thing that I was determined not to let go. So the helicopter is pulling and my arms are getting longer and longer by the second, and suddenly I hear this ping, ping, ping, ping, ping... I thought, 'What on earth is that?' I could hear it quite loudly over the noise of the helicopter, and I suddenly realized it was the stitching on the harness I was wearing — breaking. So I let go. It seemed like the sensible thing to do at the time. So we went through all that and tried several other things unsuccessfully, and finally we went back to the hotel fairly dejected. That night it rained somewhere two hundred miles upstream, and during the night the water came down and washed the boat over. Solved our problem for us." Eventually the shot was achieved, but not as originally planned. Back at Pinewood Studios — home base for the Bond films — the effect was produced with miniatures by visual effects supervisor Derek Meddings.

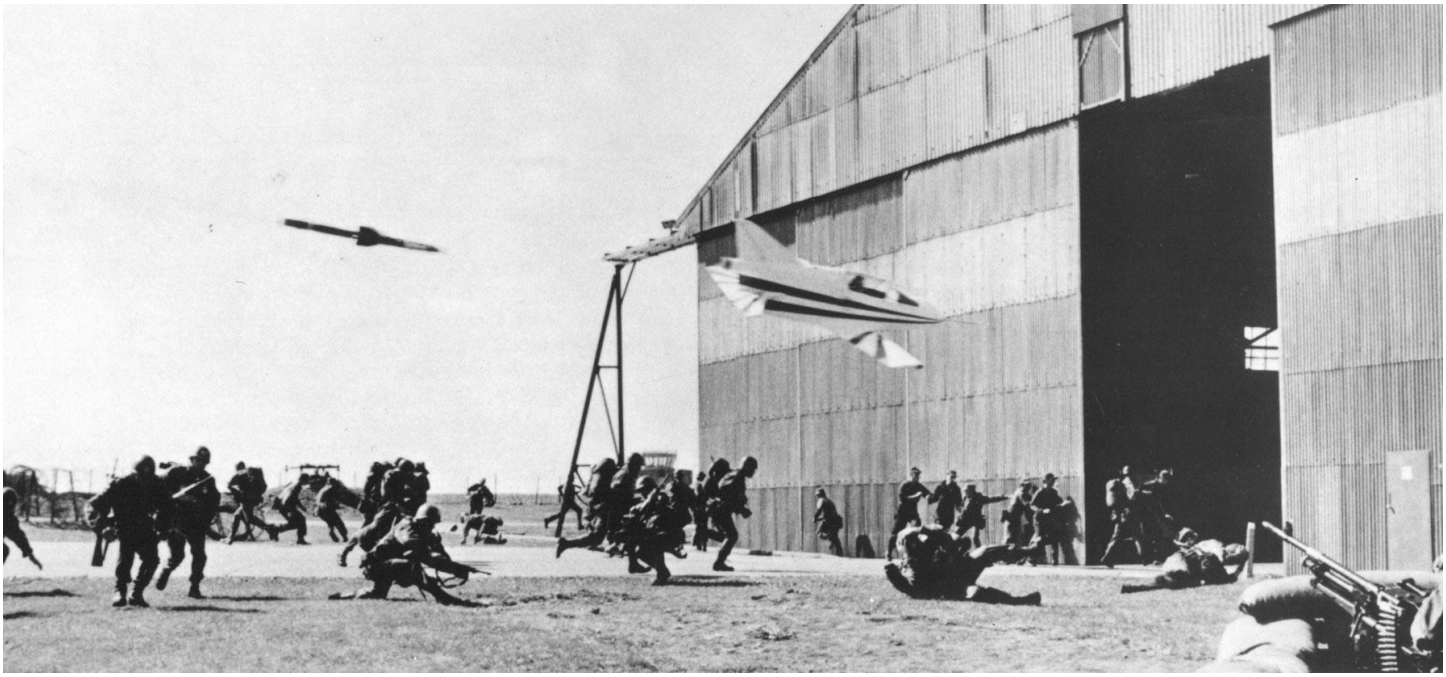
After filming the end of the chase in Brazil, the effects crew moved to Port St. Lucy, a small town in the Florida Everglades, to choreograph the preceding portion of the chase in which Bond's speedboat is pursued by three others — one manned by the implacable Jaws (Richard Kiel). The sequence involved a lot of explosions, bullet hits and the deployment of Q's singular defensive systems. Among other things, Richardson built a radio-controlled, self-propelled torpedo, which — guided by one of his crew — could be fired from Bond's boat and made to pursue the bad guys chasing close behind. The speedboat was also equipped with mines that could be released in its wake, and it was here in Florida that the top portion of the cabin was transformed into a functional hang glider so that Bond could escape as his boat plummeted over the falls.

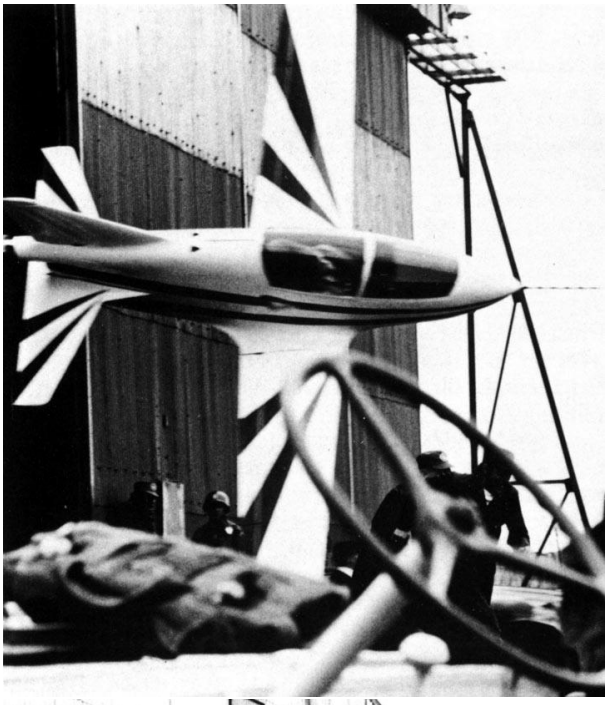
"All of the pyrotechnic work was, to say the least, a little tricky," Richardson recalled. "Explosions in water are always one of the most dangerous situations for us. We have to be very careful in order to avoid accidents because charges can drift and boats don't necessarily follow the right line. We had to make sure that the boats were as close as they could be to the



Appropriately enough, special effects supervisor John Richardson poses on a set full of high explosives constructed for the James Bond thriller, A View to a Kill. *Richardson — a second generation effects artist — has overseen physical effects and miniatures on four of the last five Bond pictures. / His first 007 assignment — on* Moonraker *— was to supervise a speedboat chase which culminated with Bond escaping via hang glider only moments before his craft was swept over a giant waterfall. / Early segments of the chase were filmed in the Florida Everglades and entailed the rigging of underwater explosives carefully timed to the passage of the various boats. / The climax to the sequence — shot on location at the Iguazu Falls in Brazil — did not go according to plan. When the speedboat became snagged at the edge of the two-hundred-foot precipice, Richardson attempted to*







by eye. We always had to be in a firing position so that we could watch the boats coming. We managed to get pretty damn close at times — the Glastron was jumping up on the water spouts created by the explosions."

Two of the chase craft are eventually blown up, and for those shots the boats were towed past camera on a special mount Richardson had built to hold each speedboat nose-up in a planing position. That way it looked as if they were moving along at high speed. Richardson insists that the secret to a successful explosion is to produce not one big blast, but a series of small ones that accomplish a variety of things. "We had different charges. Some were inside the boat and some were fixed about four feet underneath so that when they went off they would actually lift the boat out of the water. We also had self-timed charges in the boat so that on one we got it about fifty feet in the air. First there was an enormous waterspout with the boat in the middle of it, and then a fireball fifty feet off the water when the boat itself blew up."

On one of the boat chase explosions, Richardson was able to break what looks like a single blast up into three distinct parts. The first explosion occurs in a very close shot and two crew members fly out. One of them was Richardson — who, despite being a supervisor, does seem to get rather personally involved in his work. "We had an air ram in the back of the boat, so when the first explosion went off you saw two bodies flung out and into the water. It's always nice to see real people flying out of an explosion like that. It was a small controlled explosion, and it wasn't really that dangerous. The dangerous thing was the crocodiles in the water. It was a case of hearing somebody say 'Cut!' and then getting up and running on top of the water back to the boat as fast as you could! The way the scene is cut together, you see the start of the explosion and the bodies come flying out in the close shot. Then we cut back to a wider shot and see the boat blow up. Next there is a reaction shot of Bond, and then we go back to the boat which is now upside-down and blows up again."

Effects such as these are difficult and expensive to do more than once; so to insure adequate coverage, the effects unit generally employs multiple cameras. "Most of the work we do involves two cameras, but there are times when I have to beg, borrow or steal every camera I can get my hands on and have everyone who is capable of pointing one covering the scene. If you can muster three or four — especially on the big set pieces — you'll be okay." As complex as the boat chase was, Richardson's work required only a week of shooting in Iguazu and another three or four in Florida.

Richardson was not involved in the next Bond film, *For Your Eyes Only*, when John Glen made his directorial debut. But on Glen's second outing, *Octopussy*, Richardson was back at it —

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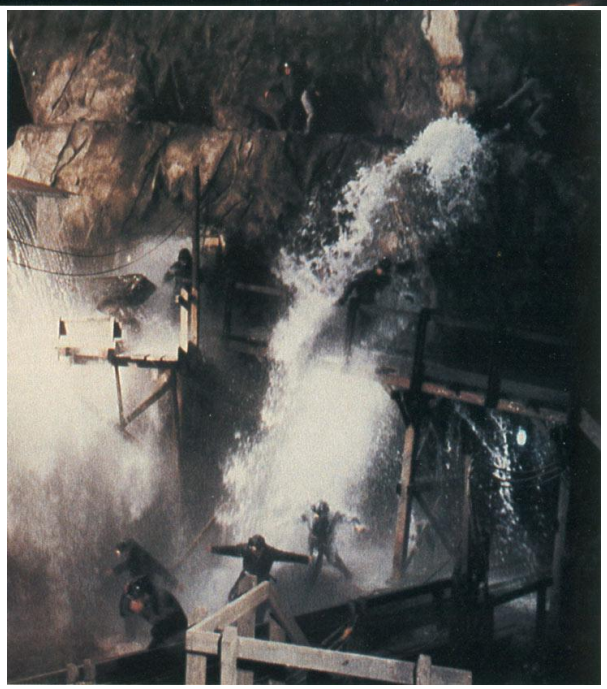

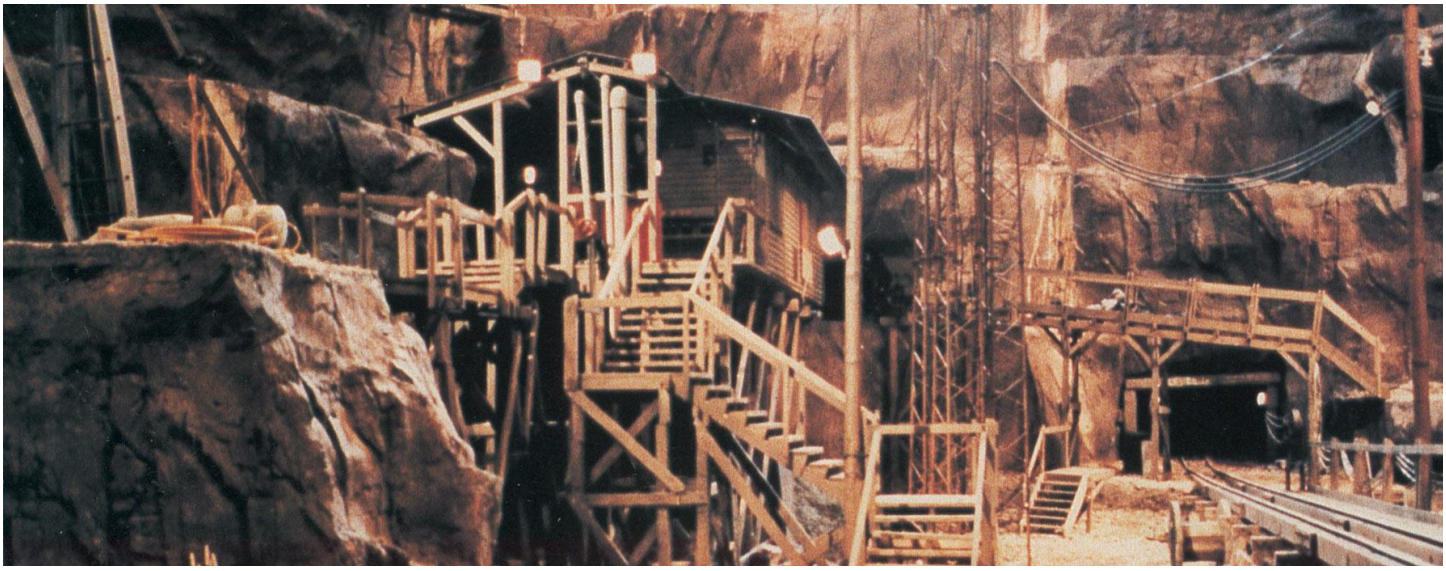

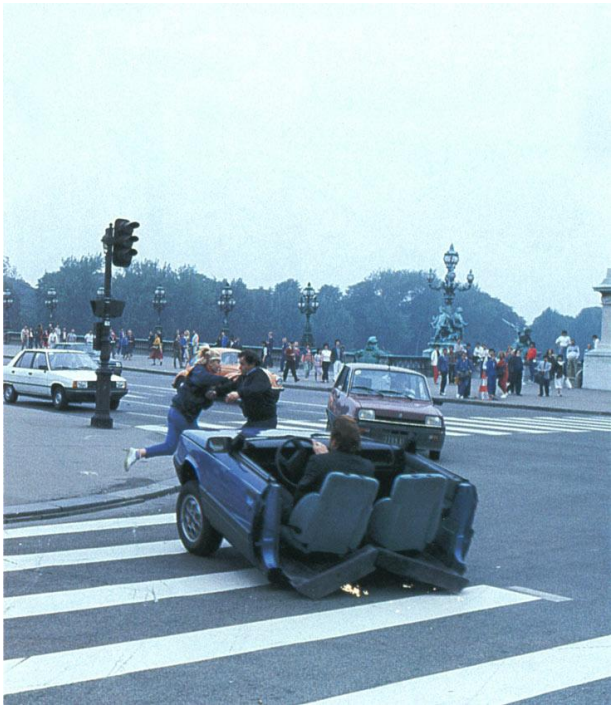

close that as it flew across and the train came on through, the front wing of the car just clipped the front of the express. In another cut, we fired the car towards a boat on the lake and we had two stunt guys who leapt out of the boat just before the car hit the water."

Richardson is the first to admit that sometimes it is the 'little fiddly things' that take the most time and attention. In *Octopussy,* for example, while Bond dallies with smuggling entrepreneur Octopussy (Maud Adams) in her island palace, one of the villains tries to disrupt their tryst with a saw blade-equipped yoyo. It was a very treacherous-looking weapon and a nightmare to construct. "We actually built a yoyo with a circular saw blade on it. Then we had to build a variety of them — one that the actor could safely use and one that would actually cut through a desk and others that were backups. It was very much a trial-and-error thing. When you get a script and it has something like that in it, it's usually no good having somebody give you a design and say, 'Build that.' You can't necessarily make it work. Normally I first get the boys to build something that works — then we worry about making it look right. We use that approach in a lot of our gags."

Richardson's next Bond outing, *A View to a Kill,* contained some truly spectacular effects work. In one sequence, Max Zorin (Christopher Walken) sets into motion a plot to corner the world microchip market by flooding the entire Silicon Valley in northern California. He then takes off in his personal blimp to observe the debacle from above. James Bond foils the attempt, of course, and manages to grab onto the airship's mooring line as it drifts across San Francisco Bay and becomes entangled in the Golden Gate Bridge where Bond and Zorin battle to the death.

The composite sequence was an intricate mix of on-location stuntwork, live-action process shots, miniatures of the blimp and portions of the bridge, full-scale segments of the bridge and sections of the gondola. To complicate matters even more, parts of it were shot in San Francisco and parts of it at Pinewood. As special effects supervisor, Richardson was responsible for assembling all the pieces — and on occasion his duties expanded to include directing the effects unit. "I've directed the model units on three Bonds, plus occasionally they let me loose with real people as well. Arthur Wooster does almost all of the second unit work; but on *A View to a Kill,* for instance, I was given most of the shooting on the Golden Gate Bridge in San Francisco. We had a lot of Vistavision plates to do, and I shot all of those on the bridge. That entailed actually going up to

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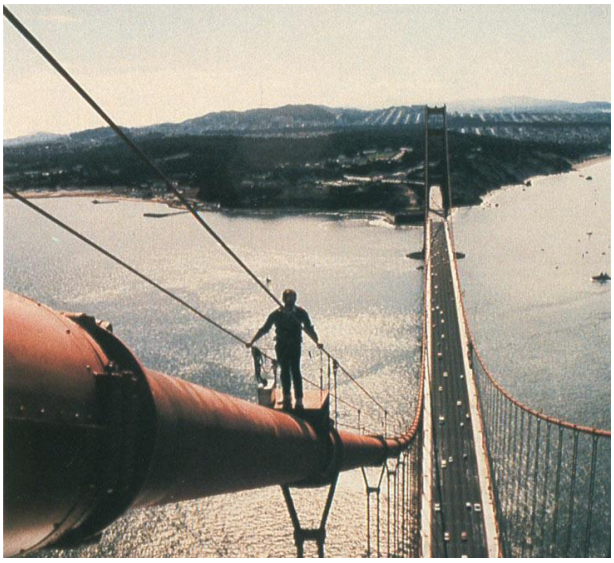

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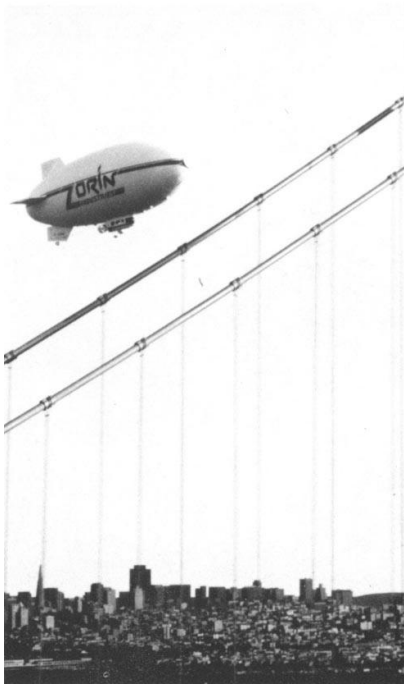
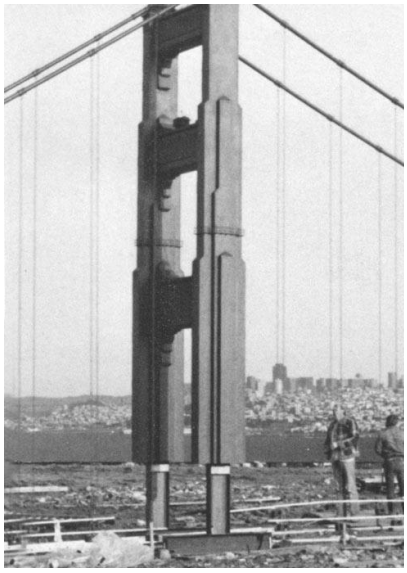


Bond hangs suspended from a mooring cable on the Zorin blimp as the airship approaches the Golden Gate Bridge — a twenty-foot-tall construct of fiberglass and steel positioned in front of a photo cutout background of the San Francisco skyline. / Workers examine the miniature set prior to shooting. / Atop an extension ladder, John Richardson rigs wiring to control the ten-foot-long blimp suspended from above by a crane. / Closer shots employed a forty-foot-long version of the ship and a similarly enlarged section representing the very top of the bridge. Effects technician Ray Lovell steadies the crane-mounted airship with a guy wire at the rear while Richardson helps effects cameraman Leslie Dear and his crew photograph a shot of the mooring rope snapping

On *A View to a Kill* there were three blimp models ranging from ten to forty feet in length. All of them were operated by radio-controlled motors. One version — used only for a shot of a disloyal follower being ejected from the gondola — was even constructed to be inflatable and actually float. Unfortunately, filling it with helium turned out to be unworkable. Not only was the gas extremely expensive, it tended to seep out of the large-scale prop and also made the ship rather difficult to control since even the slightest breeze would buffet it about. Consequently, Richardson ended up filling the blimp with air and suspending it from a crane. "It was an incredible model to build because it *was* inflatable," continued Richardson. "If we tethered it to the ground, it tended to pull the envelope out of shape. If we hung it from a crane, that too tended to pull the envelope out of shape. So we had to construct the model exactly the same way that real airships are built. It had a little tubular hatch in the bottom that was hidden by the car and then we employed curtains — made from the same material as the outer ship — that extended from the top to the bottom on the inside to balance everything out and maintain the overall shape. Once the blimp was inflated, I got in it and coupled all these curtains top and bottom, which took the load off the envelope. I was fine when it was full of air; but when it was full of helium, I had to work in an aqualung — and that didn't do my claustrophobia any good at all."

The San Francisco shoot was an exceedingly tough one. By day, Richardson was filming plates from atop the Golden Gate Bridge. Then at night he was busy burning down the San Francisco City Hall. "There was about a four-day period when I didn't get any sleep at all — not until I got on a plane for home. It was the one time I crossed the Atlantic and managed to sleep

sure of getting the best of every world. When I was doing the plates for the Golden Gate Bridge, I could go through all the storyboards and find exactly what backgrounds were required. Instead of just sticking the camera up and shooting down, I actually went to the spot where the action was taking place, worked out the angle on the actors, then placed the camera and shot that background. We knew every time that we'd get exactly what we needed." Richardson was especially sensitive about getting the plates just right because he knew they would have to work in with his models and miniatures back at Pinewood. He likes miniatures, as did his father who pioneered their use in England. "I enjoy directing miniatures," Richardson deadpanned, "because it gives me my own unit and I can sort of get away on my own and get drunk with power."



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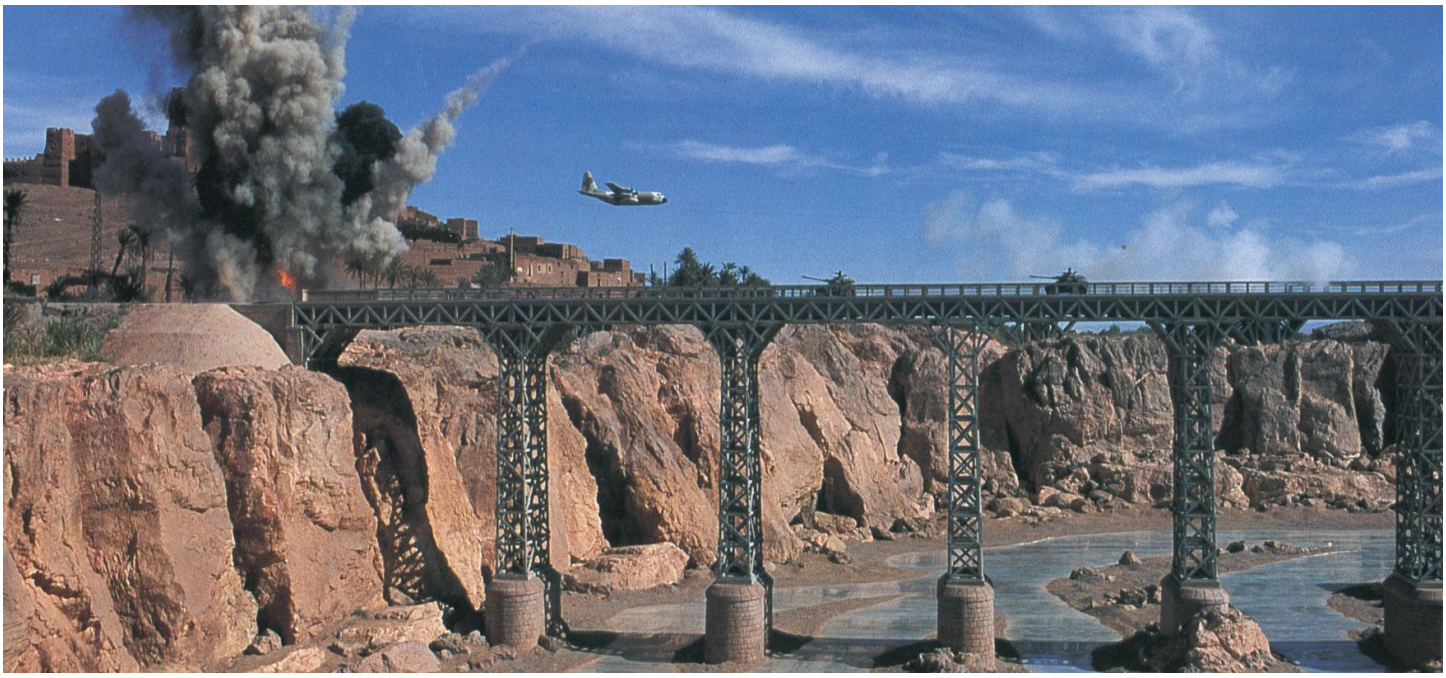

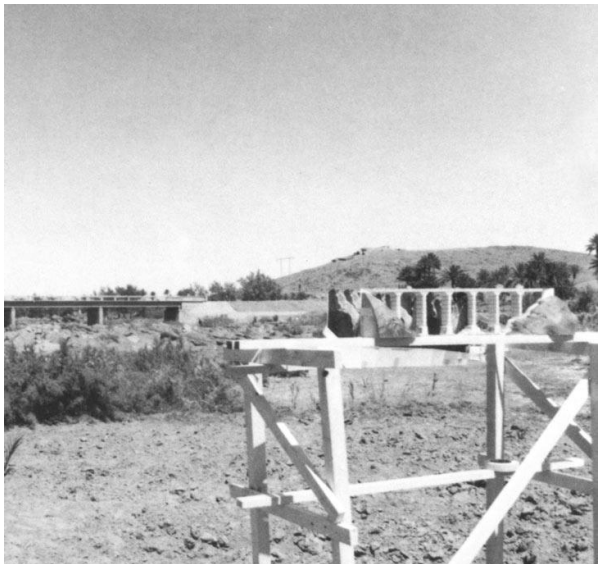

five-gallon plastic drums wrapped with primacord. In all cases, we employed a separate igniting charge which was normally napthalene-based. For one particular explosion, we managed to fire a sheet of flame horizontally along the ground for about one hundred feet by using a forty-five gallon drum of gasoline, a lot of sandbags, some primacord and millisecond-delay detonators with a main high explosive projecting charge. In addition to the big stuff, we had the usual bullet effects charges, capsule guns — fully- and semi-automatic — and an air cannon which was used to overturn a jeep."

At the height of the battle, Bond steals a cargo plane — actually an American-made C-130 Hercules made over with Russian markings. As he races down the runway with an armored car in hot pursuit, Bond manages to lift off just in time to avoid a head-on collision with a smaller plane attempting to land. The hair-raising 'near-miss' and the smaller plane's subsequent collision with the armored car was achieved entirely through the use of miniatures. Eager to insure a proper blend with the live-action, Richardson — with support from associate producer Tom Pevsner — convinced the powers that be to allow him to shoot his miniatures in Morocco with the same mountains in the background and the same lighting conditions as the first unit. He was very satisfied with the results.

"We used two scales of plane because of the difference in size between the Hercules and the landing aircraft. If we had built everything to the scale of the landing aircraft, then the Hercules would have been unmanageable. We would have needed a model with a twenty-five-foot wingspan. If we had built everything to the scale of the Hercules, however, then the landing aircraft would have been too small to rig the explosion. So at first we had a twelfth-scale landing aircraft and a twelfth-scale Hercules — which had a twelve-foot wingspan — and we shot the Hercules roaring down the runway and taking off over the smaller plane. We also had a twelfth-scale armored car since all three were seen together. Then as soon as the Hercules was off the ground and out of our shot, we substituted a sixth-scale passenger aircraft which gave us better angles. We could get the camera lower and see the plane come along and hit the armored car and the wing take the top off the vehicle. From that cut we went to a real armored car on fire with an actor jumping out."

A second and equally remarkable miniature was used in a continuation of the same sequence. Bond's freedom-fighter friends are being routed by the Russians and so he steps in with some much-needed air support. As the Afghans retreat across a bridge with the Russian tanks hard on their heels, Bond pilots

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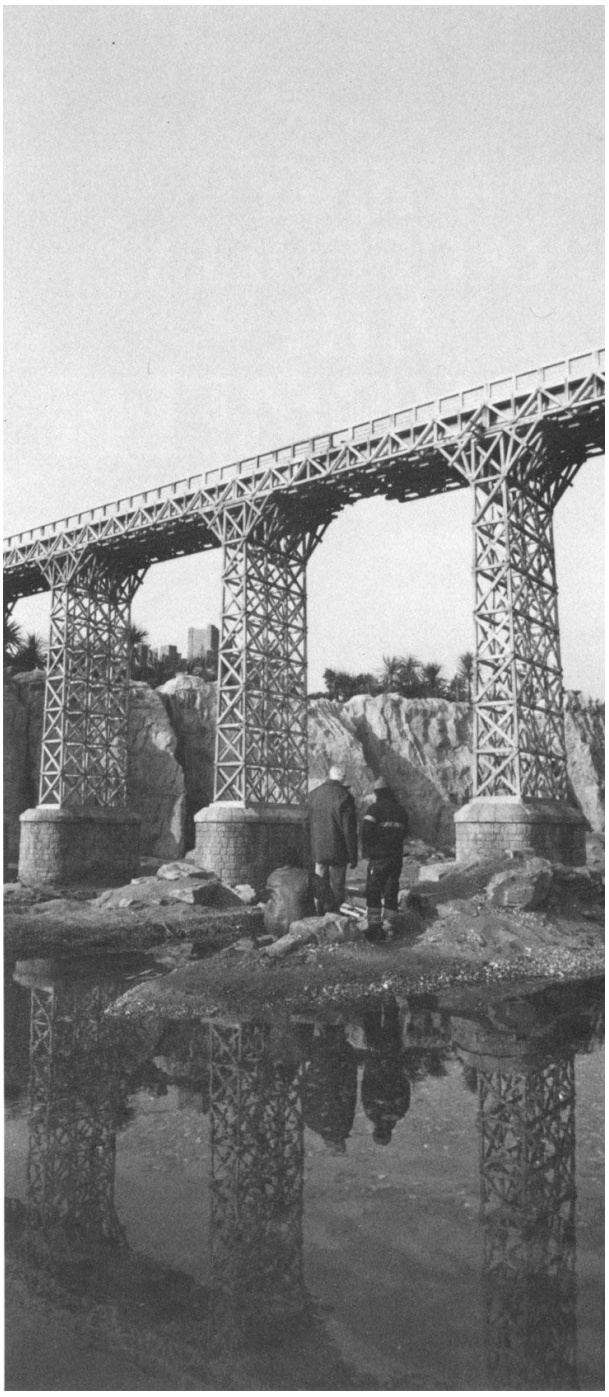

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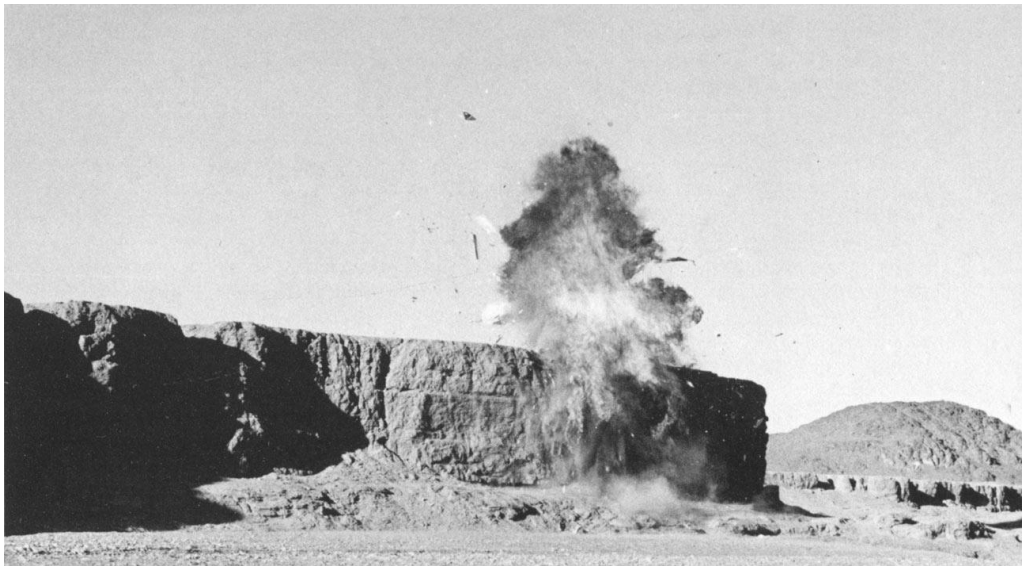

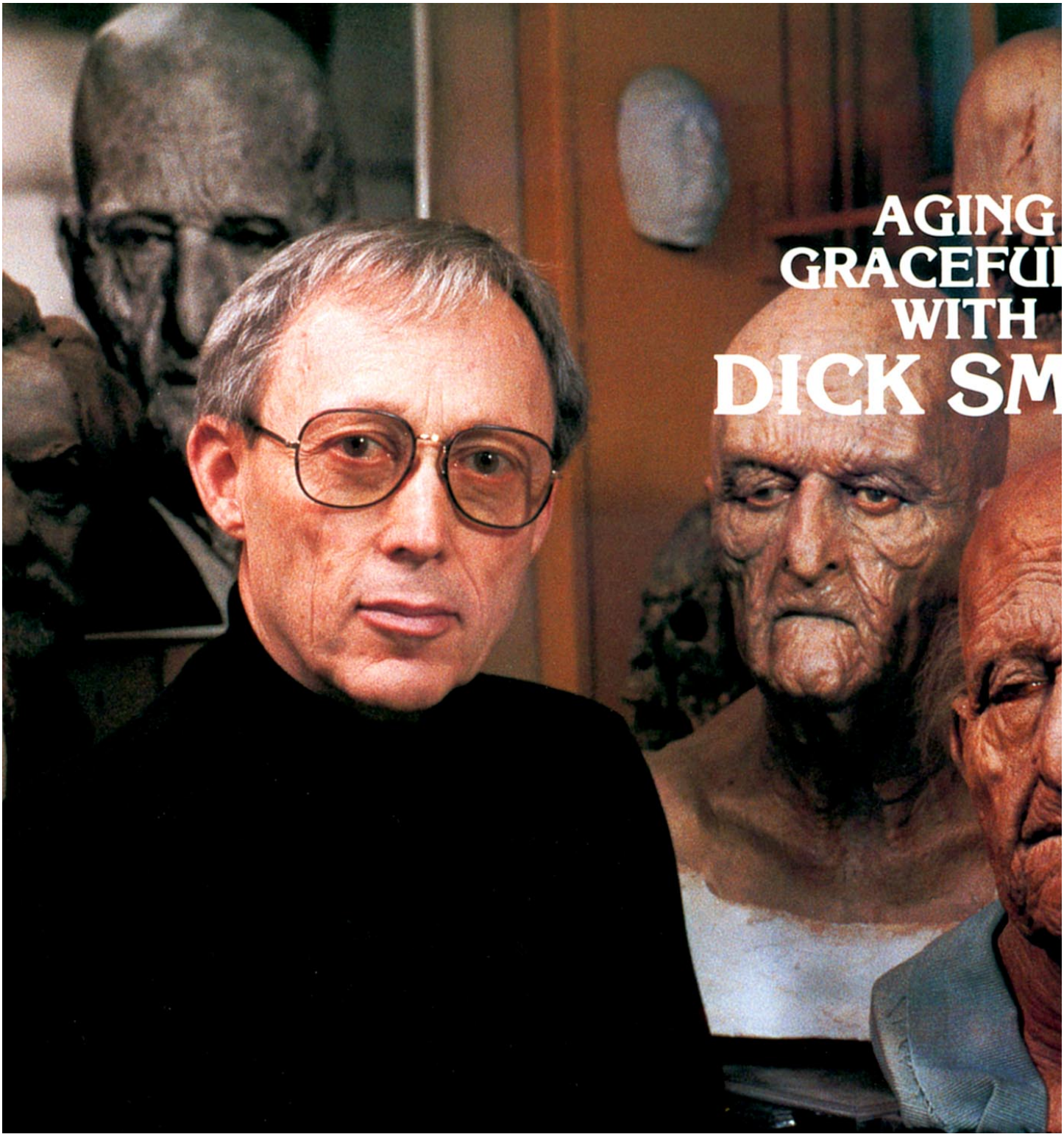
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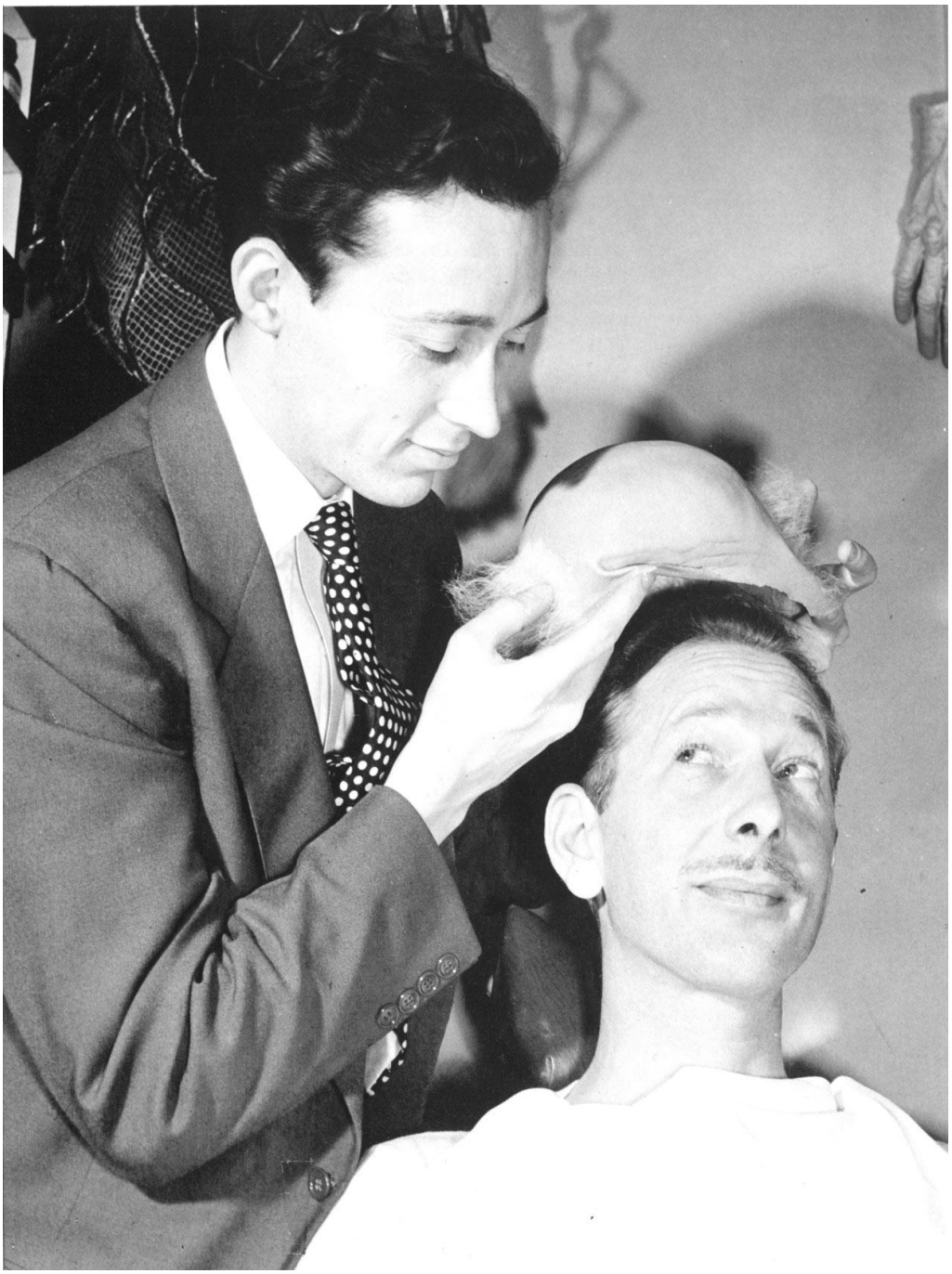
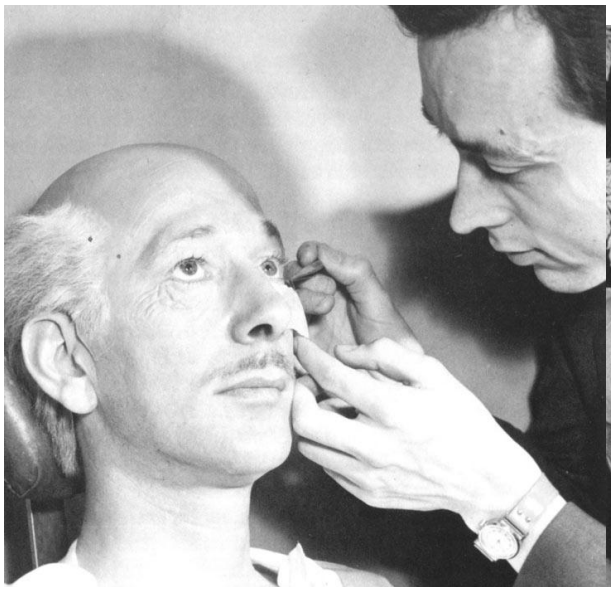
DICK SM

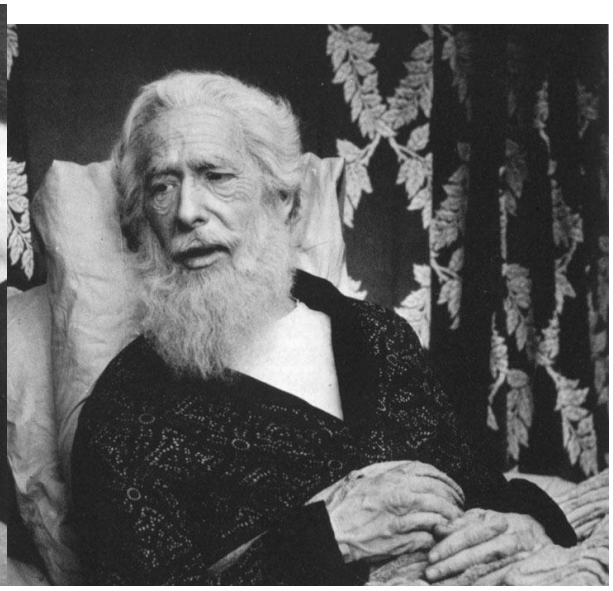
New Year's Eve until dawn — that was my celebration. I was determined to make it great because the director had promised that he was going to get closeups. But when we got to the day of shooting he said, 'Oh, we can't do closeups on her — she looks too disgusting.' So we got nothing but the longest shots and I could have died of unhappiness. That is the one bad thing about the makeup profession and it happens to everyone in the business — you do what you think is some of your best work and for some crazy reason it is not used. Even if you get paid well, it is still a bitter disappointment when it happens."

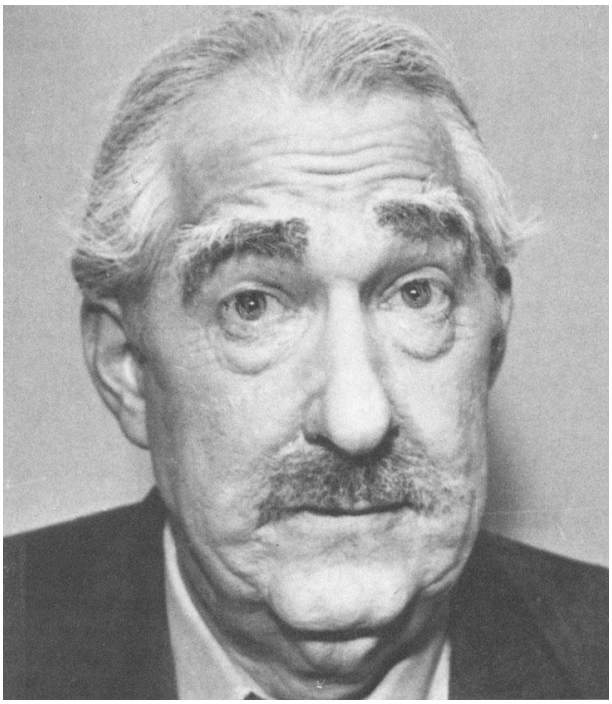
Before long, Smith graduated from using latex appliances to ones made of hot-melt vinyl — a fleshlike material often used for making fishing lures. Though an improvement over latex, the hot-melt vinyl contained plasticisers which were resistant to adhesives, making it very difficult to adhere to the skin. This lesson, too, Smith learned the hard way. Commissioned to age Vaughn Taylor for one of the live Sunday night dramas popular in the early days of television, Smith attached heavy jowls, a double chin, a lower lip piece, a nose and some eye bags — all made out of hot-melt vinyl — to the character actor's face. "The custom in those days was to rehearse until about seven o'clock, then have a short break — about an hour — before you went on the air at eight o'clock. Since there was no possibility of taking the makeup off and starting it over again in that amount of time, we'd just touch it up and go on and hope it could live through another hour-and-a-half. Well, it became apparent after the first few scenes that Vaughn's chin was getting loose. So during a break, I rushed him into the makeup room and just pulled this chin piece right off — and water literally *poured* out from beneath the cheeks. Since it was all plastic, there was no absorption and all of this sweat had accumulated underneath the appliances. I took a hair dryer and blasted him with it to dry his face and then threw the chin piece back on just as the floor manager yelled into the room, 'You're on, Vaughn!' So he ran on to do his scene, and I just stood there watching a monitor with all of my fingers and toes crossed. I had told him to take it easy out there; but of course, being a good actor, he didn't take it easy at all. He sat there at a kitchen table, looking up at the other actor — which was putting the worst possible stress on the chin — and he was gesticulating with his head back and forth and, oh boy, was I sweating. I could just visualize that chin dropping — plop — right on the table like a piece of liver. As I watched, I began to detect a little edge lifting on the line from his mouth to his jaw. The scene was only about ten minutes, but it seemed like *hours* as I stood there praying. Finally, the scene was over and he got off — and I don't think I ever used that hot-melt material again."

The near disaster with Vaughn Taylor's chin led Smith to the relatively new alternative of foam latex — specially formulated









but equally prominent nose for Jose Ferrer's television version of *Cyrano de Bergerac*. Foam latex became increasingly vital as television moved into color since the traditional method of painting in wrinkles for old age makeup was much less convincing in color than it had been in black-and-white. Appliances were definitely the preferred new method of creating old age illusions. "The success of appliance makeup is largely dependent on how close you can keep it to the actor's own face. I try to make no appliance any thicker than a quarter- to three-eighths-of-an-inch thick — maybe in the jowl area, which doesn't have a lot of expression in it, I would go to half-an-inch thick. It is a common mistake of the inexperienced makeup artist to make these things much too thick. I did it myself until I studied lifemasks of very old people and realized that there is hardly anything *there* in a naso-labial fold or a jowl — the skin is not thick at all. So after I've blocked out a makeup, I start shaving it down and I cut off anything I can while still retaining the effect I want. As a result, the appliance comes out as thin as is practical and it allows the natural facial expression to come through. The actor feels better, looks better — and the appliance works better."

One of Smith's last big aging jobs in the black-and-white television era was also his most harried. Claire Bloom — then twenty-six years old — was cast in a live production of *Victoria Regina* which called for her to age from a young woman in her twenties to an old dowager of eighty. "In the first act, she is the young girl who becomes queen. We had to age her to about forty during the commercial break which was three minutes and twenty seconds — commercials were long, even then — and she also had to change her costume and hair in that break. So she ran across this very large set to wardrobe where I had an assistant standing there with a stopwatch. I had learned from previous quick-changes that in the panic to get everything done in time, often we would not use all of the time available to us. So this assistant with the stopwatch cued everything. Wardrobe had fifteen seconds to do their change; then he cued the hairdressers that it was their turn. After that, Claire sat down at a little desk for makeup and Bob O'Bradovich — who was my main assistant at the time — and I stood on either side of her. We had made what resembled cigarette-girl trays to hold all of our equipment. We gave her a foam rubber nose and a double chin and a big foam latex jowl piece that covered both sides of her face to make it fat. Another assistant was also on hand and his chore was to take a tube of surgical adhesive and squirt some into the appropriate latex appliance and then hand it to

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One of Smith's last big aging jobs in the black-and-white

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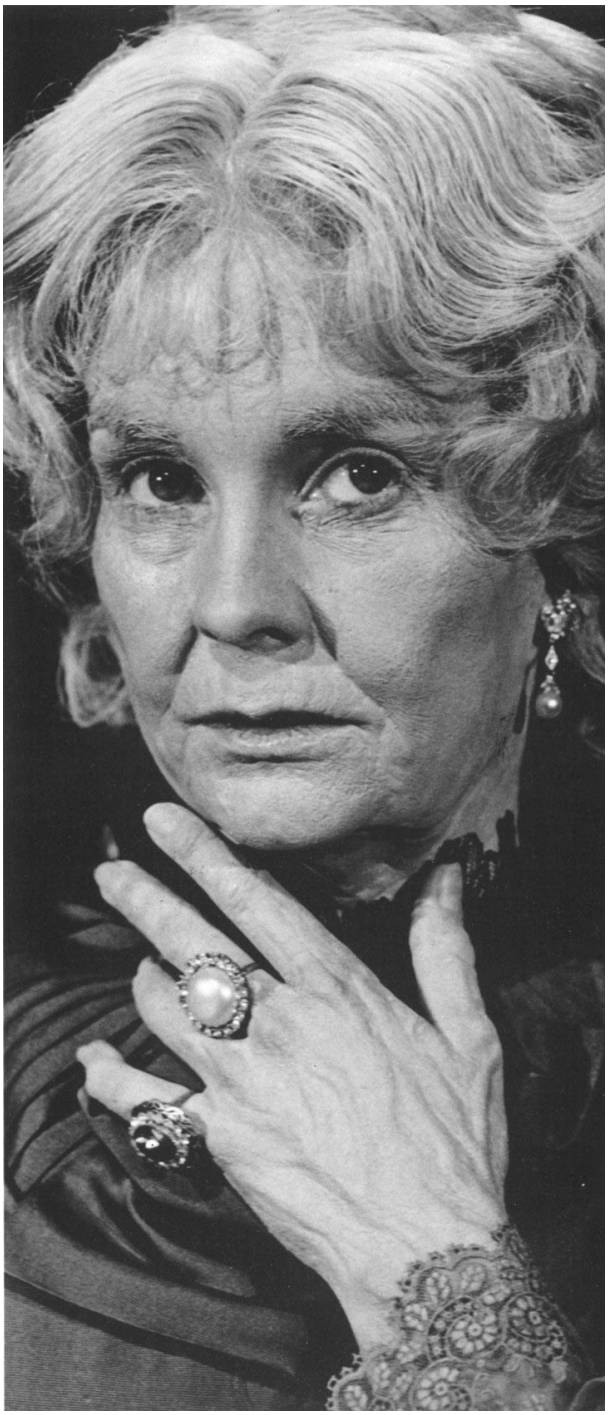
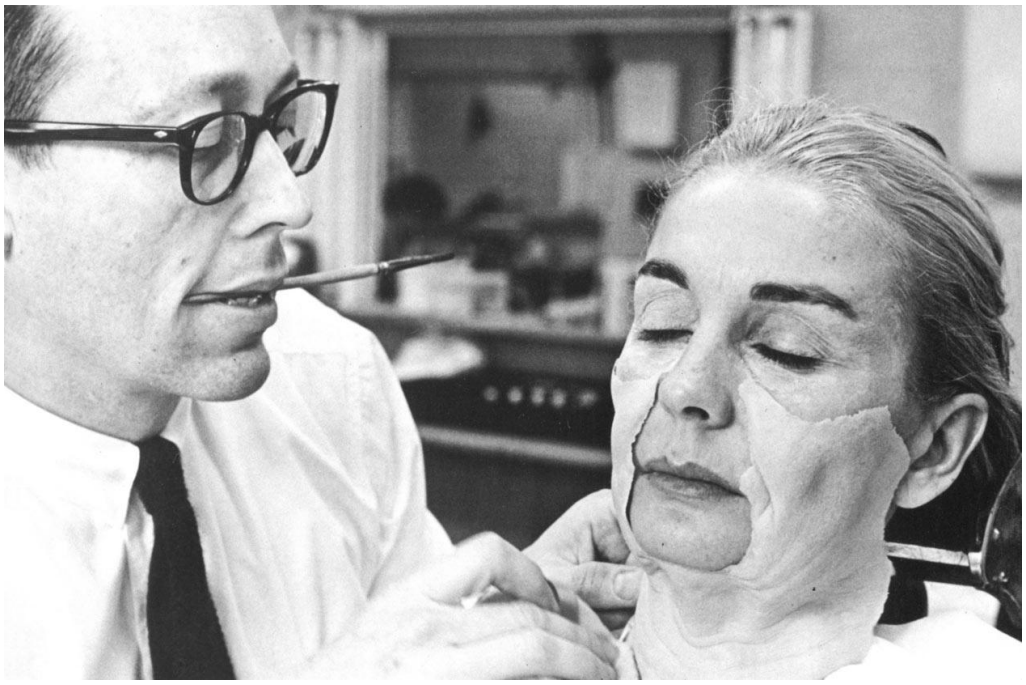
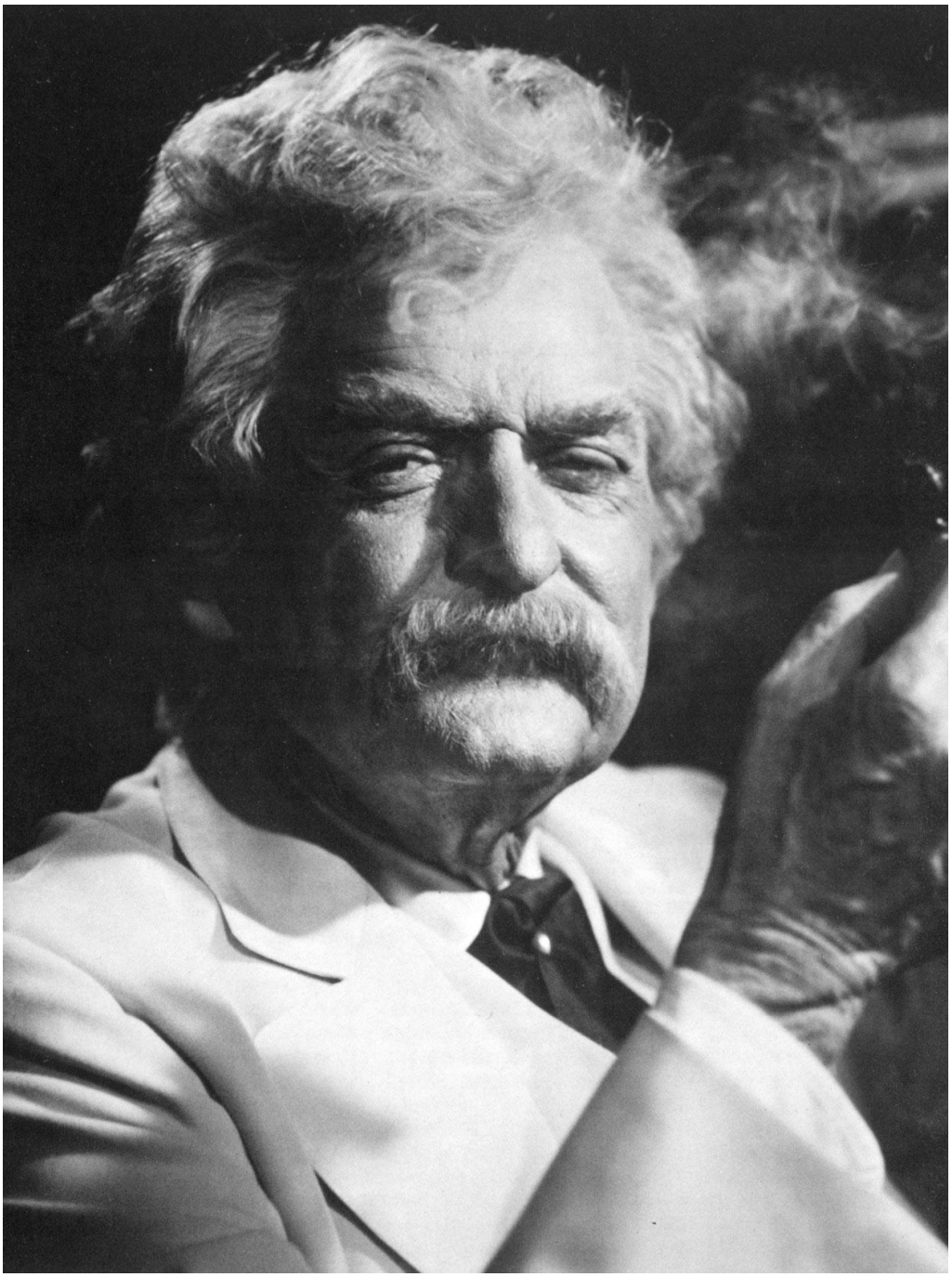
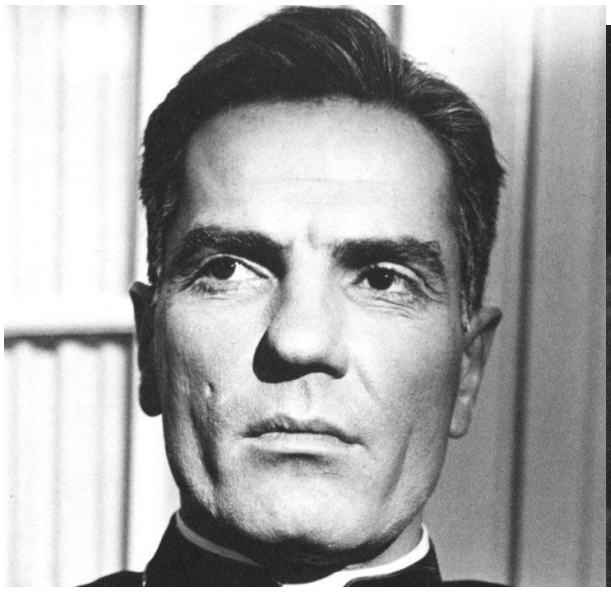
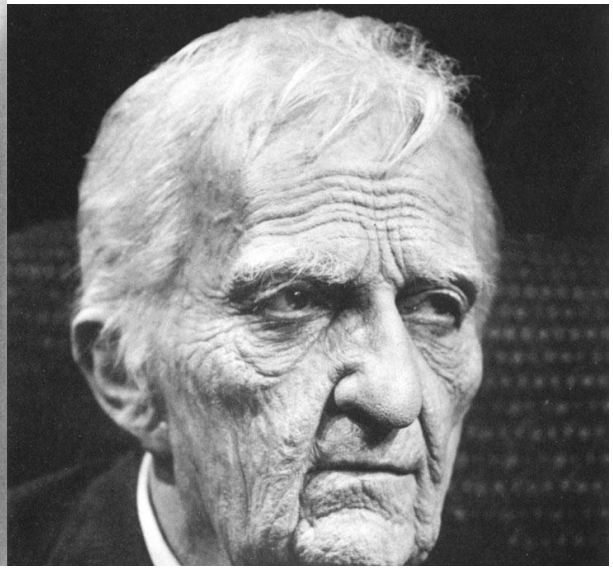






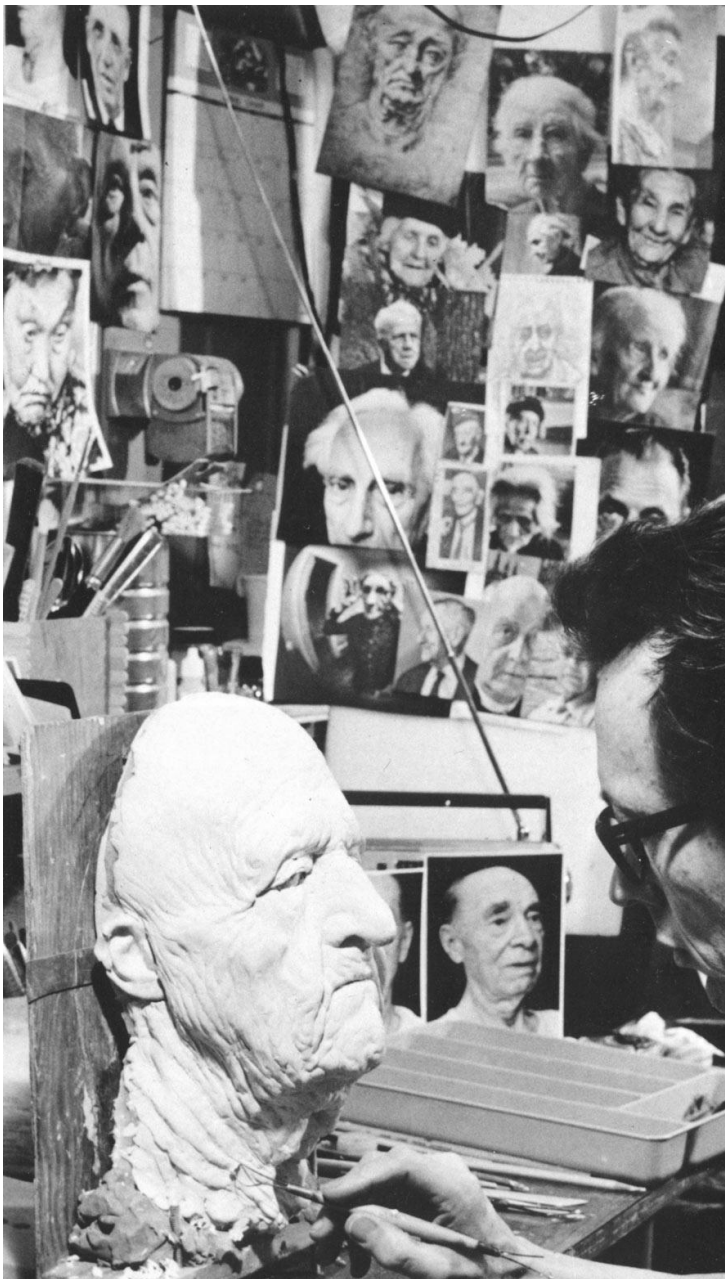


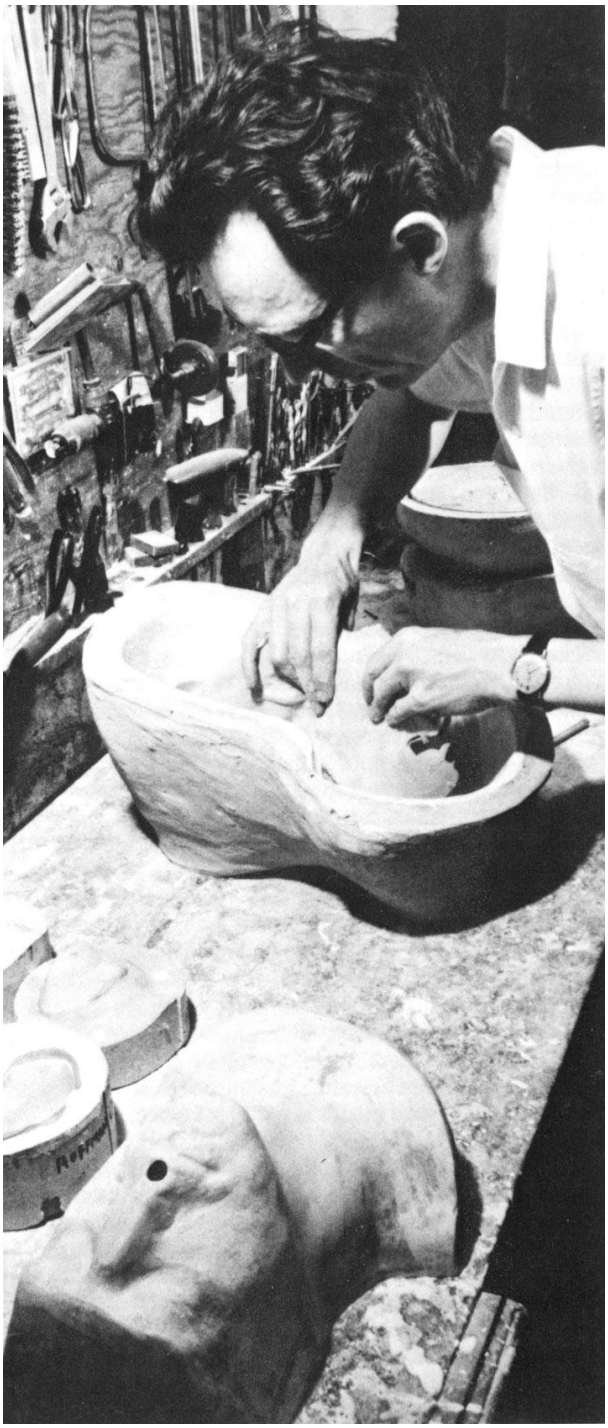


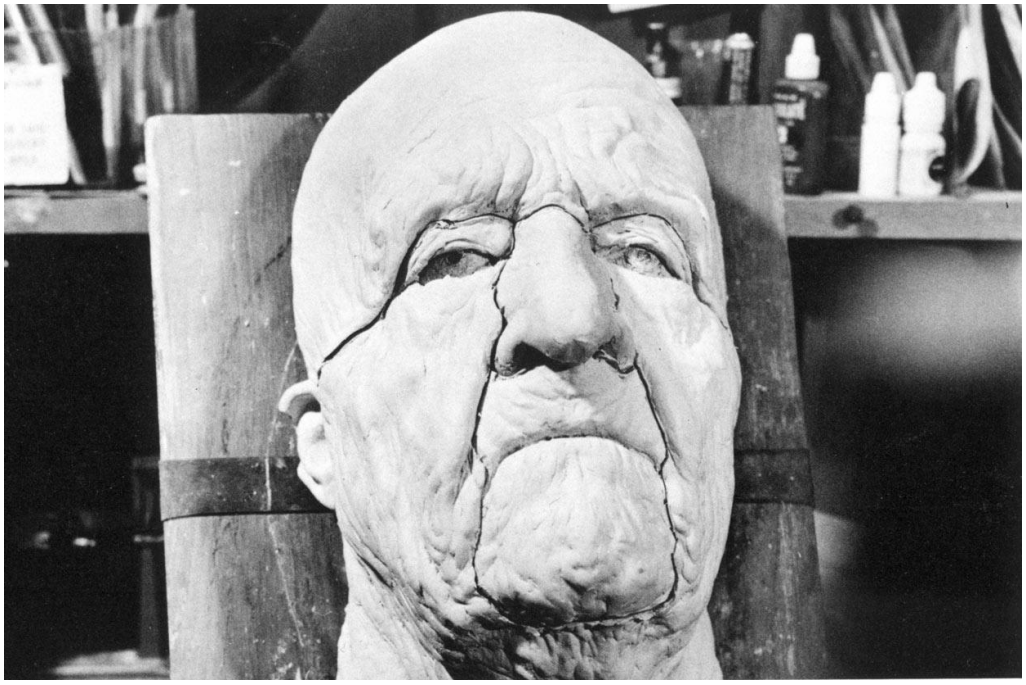
and misshapen. In makeup, what creates the illusion of the former is exaggerating the knuckles — building up the knuckles makes the part in between look emaciated. This is the principle you have to use, in general, for all makeups. Obviously, you can't hollow things in; you can't take away from what is actually there. So what you have to do with something like fingers is build up the knuckles to give the illusion that the fingers in between are thin. You can also make an area look deeper than it is by giving it a darker color or a coarser texture which absorbs more light and makes a darker shadow. One of the problems with the hands was that Jack Crabbe had to smoke all the time; and with the foam latex on the back of his hands, Dustin wouldn't sense the heat of the cigarette. A number of times, a cigarette would burn down until someone yelled, 'I smell rubber burning!'"

Smith's blinking eyelids were adapted from an idea he had pioneered the previous year — with only partial success — on the television soap opera *Dark Shadows*. "Before blinking eyelids, there were two possibilities — either you put little appliances on the lid itself or, if you were doing something like an oriental, you made an eyelid cover that was not glued onto the actor's eyelid but rather above it. In that case, the actor's real eyelid moved up and down underneath this cover. In fact, in some old films where people have been made up to look oriental, you can sometimes see their own eyelids when they look down. Well, I didn't want that. Yet I had to have very droopy eyelids over Dustin's eyes. So I devised a way to make them out of foam latex and they were like little accordians. I used an epoxy instead of plaster to make the molds so they wouldn't break — they were very fragile. What made these appliances different from all other foam latex appliances was that they did not touch the actor's skin except at the edges. Each eyelid was glued at the top — just under Dustin's eyebrow — and the bottom edge was glued to his real eyelid just above the eyelash. Of course, the sides were also glued — but between the middle of the appliance and the actor's skin was a small airspace. This allowed the eyelid to close easily, because not only did the thin foam latex stretch, but it also unfolded accordian-wise. When the actor blinked, the eyelids blinked too. They worked nicely and I've used them on other people since. Unfortunately, *Little Big Man* was also the first time I had used contact lenses, and they were the old hard kind. The first day we shot, they fell out every time Dustin blinked and so we had to shoot him sideways and every other way. That night we ran out to have them reground and they were a little better the next day. But the final result was that Dustin acted his scenes as the old man with hardly ever a blink. In fact, the way it was edited, there isn't a single blink in the film."

Shooting of the sequence — in which a persistent young





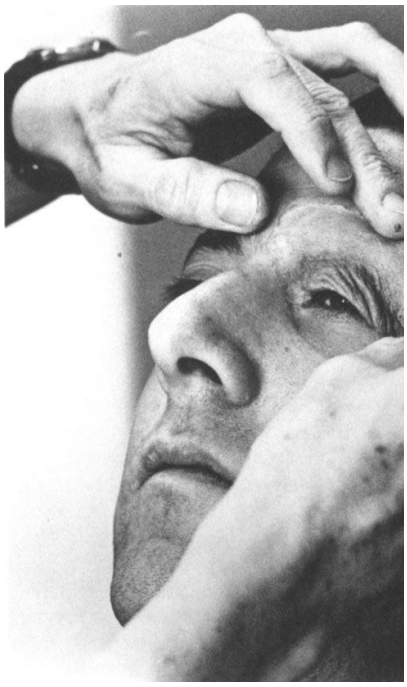


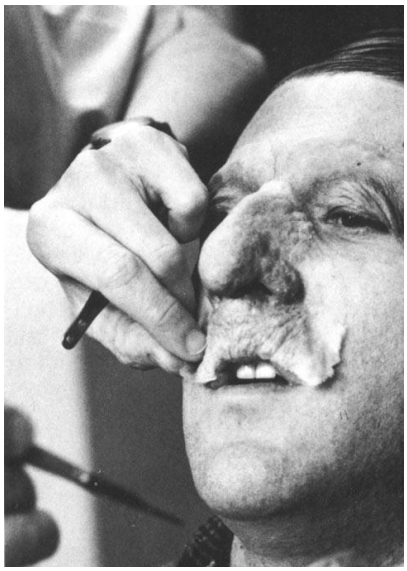
the skin upwards as much as I can. When it is dry it's sticky, so I powder it to keep it from sticking to itself like rubber cement. Next I do the lower eyelids; and then each side of the face, pulling up at the cheekbone and covering all the part beside the nose, down the corners of the mouth, right down to the jaw. I have also found that if I have the actor stick one finger into his mouth and push out his cheek that it gives an extra stretch to the skin and creates very interesting wrinkles in that area when you let go. Old age stipple is most effective on faces over forty — younger skin just isn't loose enough to respond well to it. Since there is no flesh at the jowls or a double chin and those sorts of things that come with age, it simply looks like a youthful face with wrinkles. So the technique does have that limitation."

To create Don Corleone's more advanced age later in the film, Smith applied four coats of stipple instead of just two. "It got a little papery-looking, but it was all right. The only problem with it was that it was hot and Brando would sweat, and I was using the old age stipple without actually putting makeup over it so I could keep its translucent look. But every time a little perspiration came up, the stipple would turn white; so I'd have to run in with a brush and paint out the white spots."

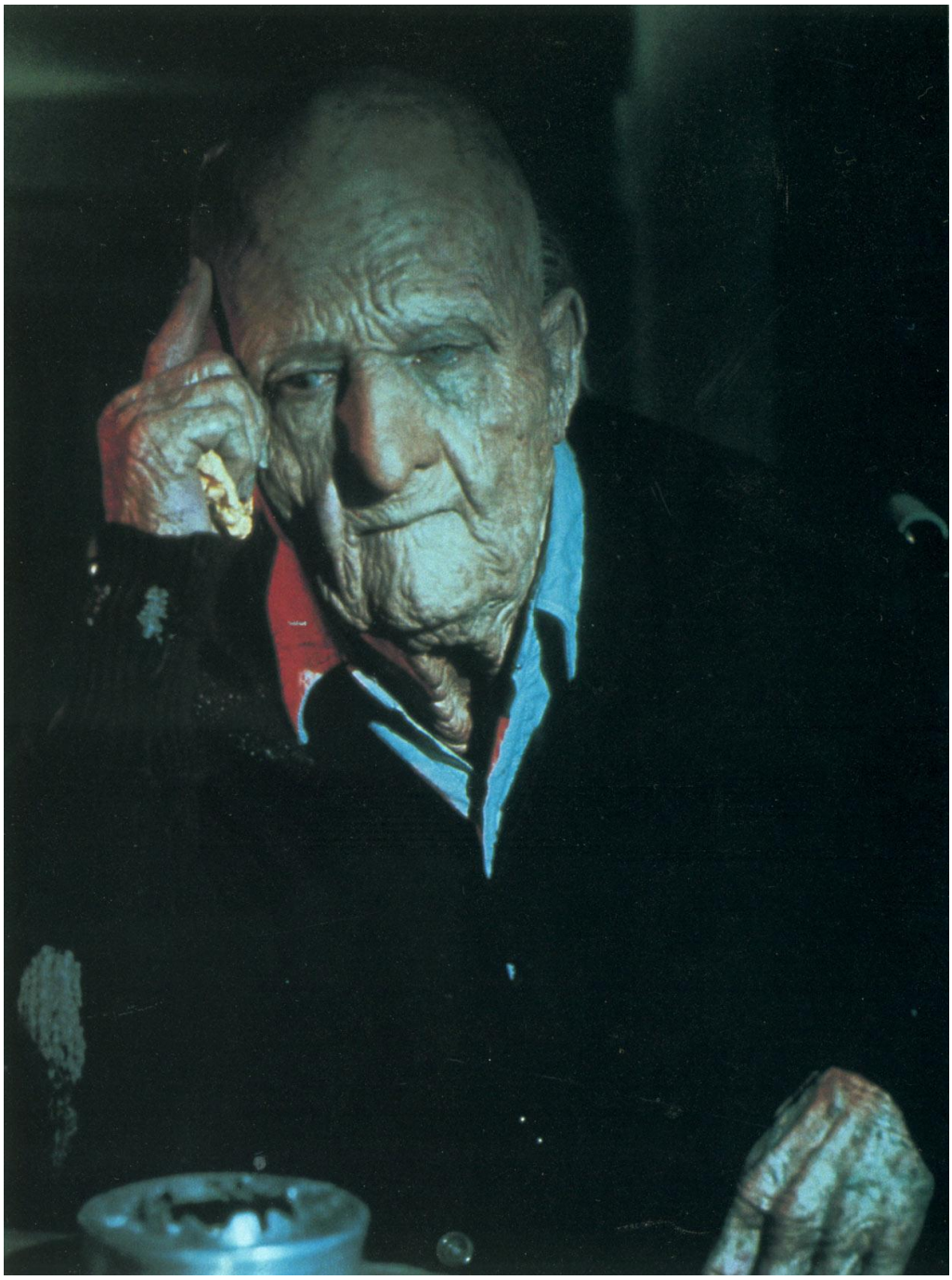
The simple *Godfather* makeup, which took only an hour-and-a-quarter to apply, was not the masterpiece that Smith had envisioned when he first took on the project. But even he admits that it sufficed, and his disappointment was offset somewhat by the opportunity to work with Brando. "Brando was really a joy to work with, though he is a notorious tease. He'd had a reputation for not being on time, but he was on time every day on that film except for one morning when he'd overslept and he came in about a half-hour late. He was very upset about it, and asked if I could please rush the makeup and just get the basic stuff on. But of course, I couldn't do that — what if they'd needed a closeup? So he sent someone down to see what the first shot was going to be, and it turned out to be a long shot so he suggested that I could finish him up later. I try to work fast anyway, but I was really working like a demon on him; and after about twenty minutes, with only half of his face on, Brando looked in the mirror and said, 'That's enough.' He got up out of the chair and started to leave — with me standing there stuttering, totally horrified. But at the door he stopped and grinned and said, 'I just wanted to see what your reaction would be.' And he sat back down in the chair."

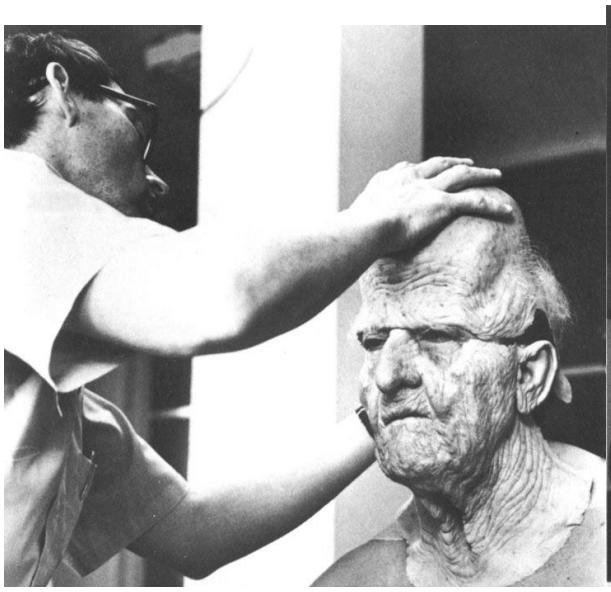
In an era of unsensational makeup, William Friedkin's *The Exorcist* afforded an opportunity for sensationalism at its highest. When Smith accepted the film, he was well aware that the various phases of Regan MacNeil's demonic possession would be his primary responsibility. However, his aging expertise again proved invaluable since the forty-four-year-old Max Von

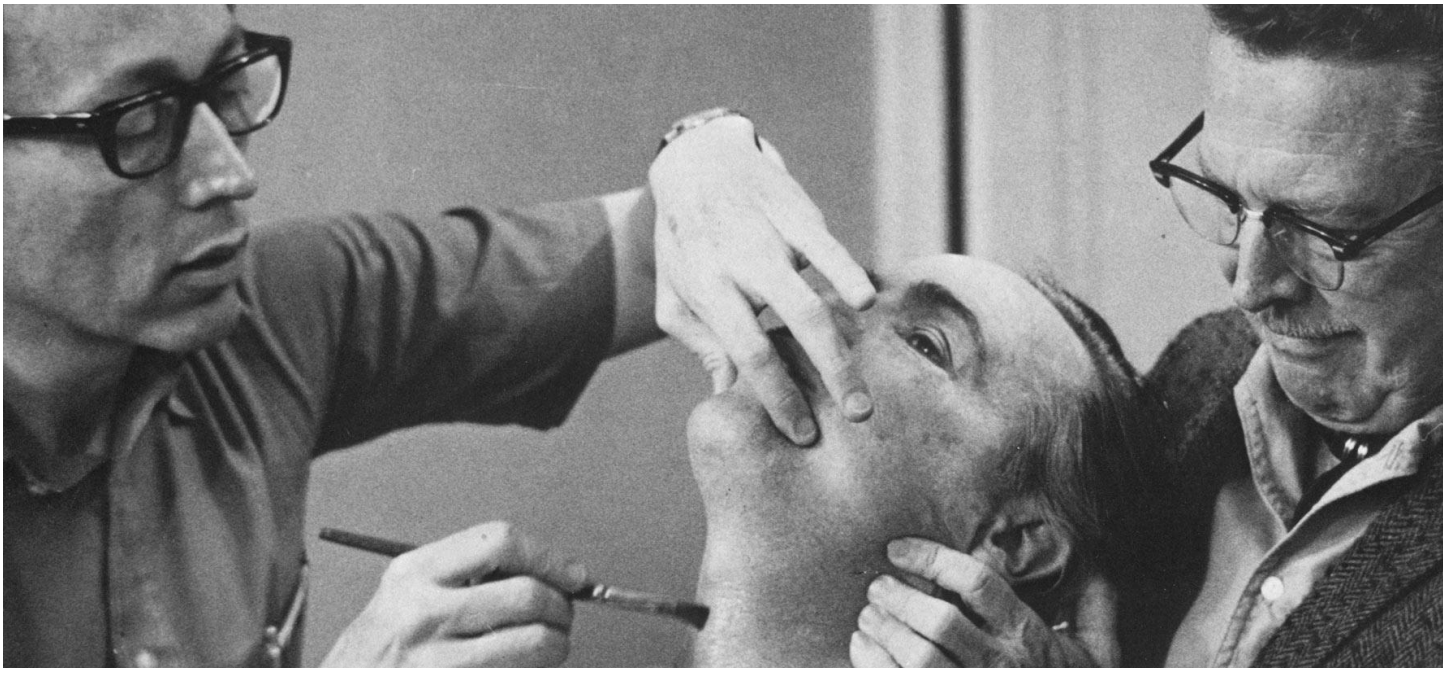


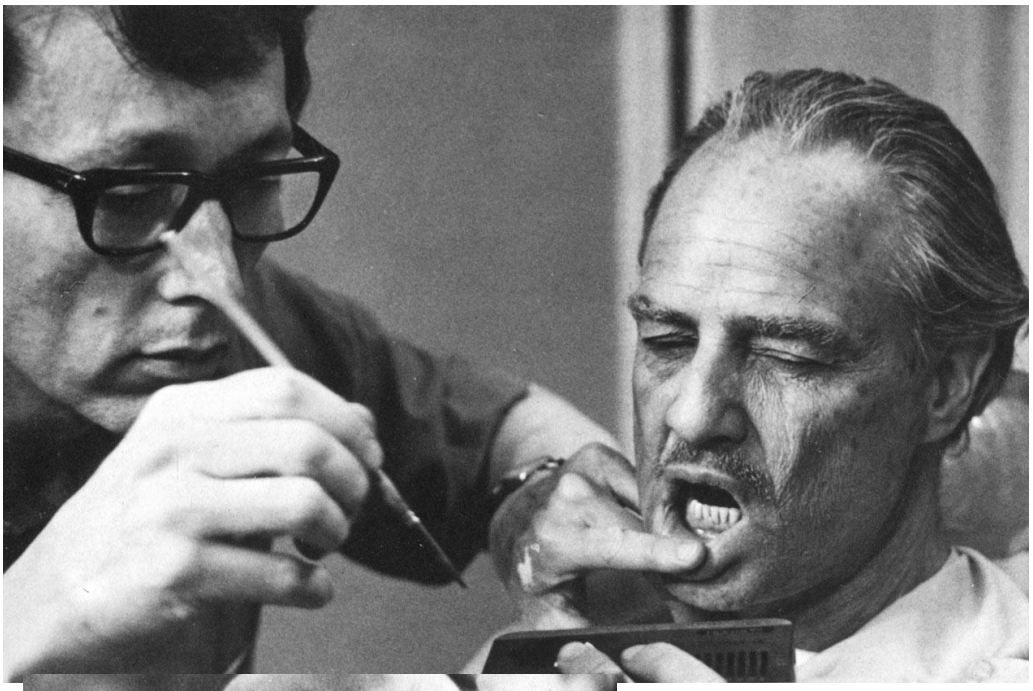


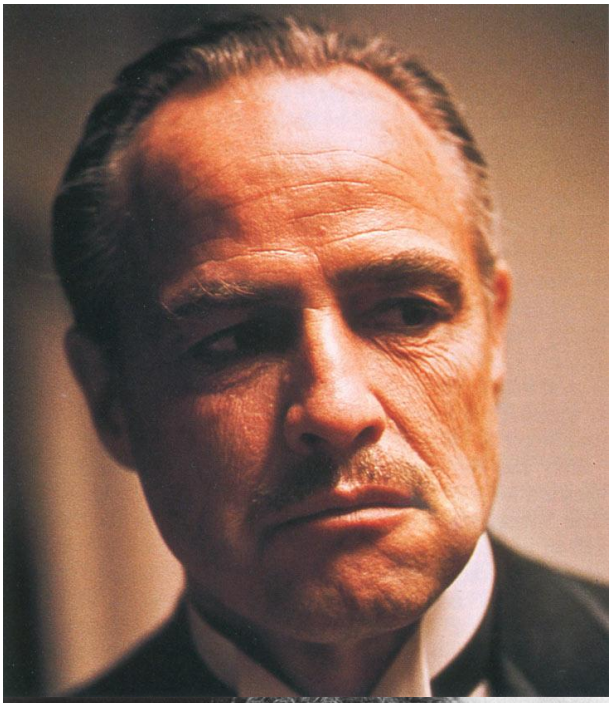
Smith perfected blinking eyelid appliances on Little Big Man. *Extremely thin foam latex pieces, the eyelids were attached at the top — just under the eyebrow — and at the bottom slightly above the eyelash. The area in between was not glued down. Thus, whenever Hoffman blinked, the eyelid appliances would fold and unfold realistically like an accordian. Contact lenses were also employed to give the eyes themselves an aged appearance. / With the eyelids now in place, Smith attaches the enlarged nose and upper lip piece. / The next appliance to be affixed covers the chin. / Smith fits the forehead and bald head piece to his nearly finished makeup. Though the appliances were prepainted to save time, final touchups and blending had to be done on the actor.*

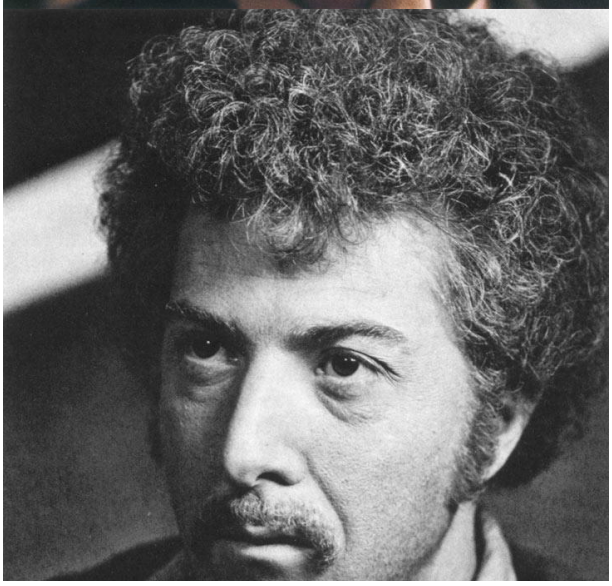












I would just do his makeup with old age stipple. But I quickly realized that the technique wouldn't work well with his face. And he was supposed to be much older anyway — well into his seventies. So I grabbed a lifemask of him in his hotel and wound up using both appliances and stipple to create the age." Stipple was applied to Von Sydow's forehead, the sides of his neck, his hands, and around his eyes, whereas appliances were used for the sides of his face, his upper lip area and his chin. An appliance was also employed to create a wattle on his neck. "There is a difficulty when you combine appliances and stipple because the stipple creates a wrinkled texture that is almost impossible to duplicate in sculpture — you can't model it to look the same. Here I had a neck that was stippled on either side, yet it had to blend in with a little wattle in the middle. So I got the idea of putting three coats of stipple on my own neck which gave me a nice little wrinkled wattle. Then I made a mold of it and a cast in a thin sheet of wax. By softening the wax, I could form it to fit on Max's lifemask. I used that as my appliance sculpture and was able to make my molds from it. The resulting appliance fitted on Max, but it had this surface that was all crinkled up like old age stipple. So all I had to do was stick it on him, put stipple right over the edges of it and blend it all together. It worked quite well."

Though most of *The Exorcist* was filmed on studio soundstages, the opening sequence at an archeological dig required location shooting in Iraq. Smith knew from his experience on *The Godfather* that traditional old age stipple would not hold up well in the hundred-plus degree climate of the Iraqi desert and so he set about finding a new formula. "I did tests of different formulations, trying all kinds of things on Max's double who was a good sweater. I put him in a hot room that they had on stage to warm everyone up when they came out of the bedroom set — which had a built-in freezer so that the actors' breath would vaporize. I would run the temperature up in the hot room, and then put this poor bastard inside and let him sweat — and, sure enough, everything just fell off. I finally discovered something in my notes from the early days of television when I had been experimenting with stipple. One formula had a note that said, 'No good — impossible to get off.' And I thought: 'Aha! *That's* the one I want.' That wound up in the makeup on his hands and it worked wonderfully. To get it off we had to soak the hand in a basin of warm water to loosen it. It didn't rub off on the costumes and it looked marvelously realistic. I've used the same formulation many times since."

Smith had designed the makeup for Von Sydow; but because he was responsible for Linda Blair's much more elaborate makeups, he left the actual three-hour application to New York makeup artist Robert Laden. Only when the production company went to Iraq to shoot did Smith take over the application

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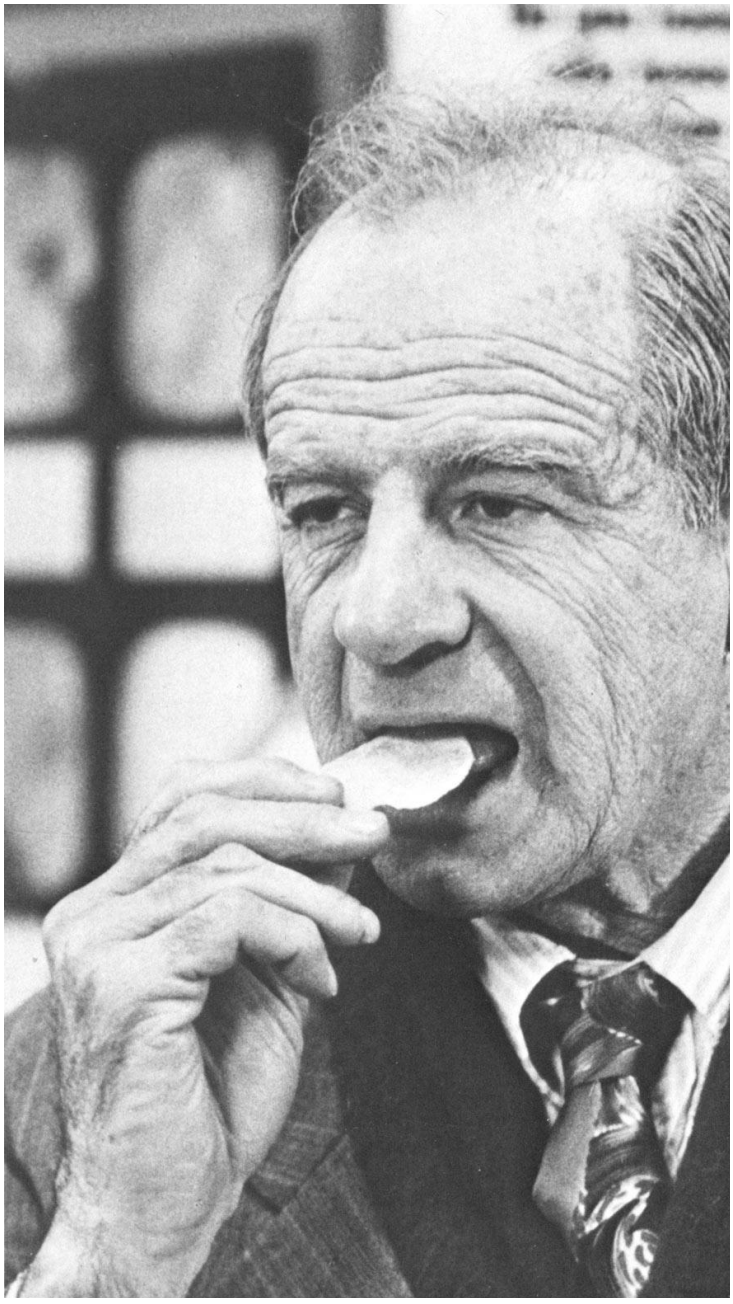
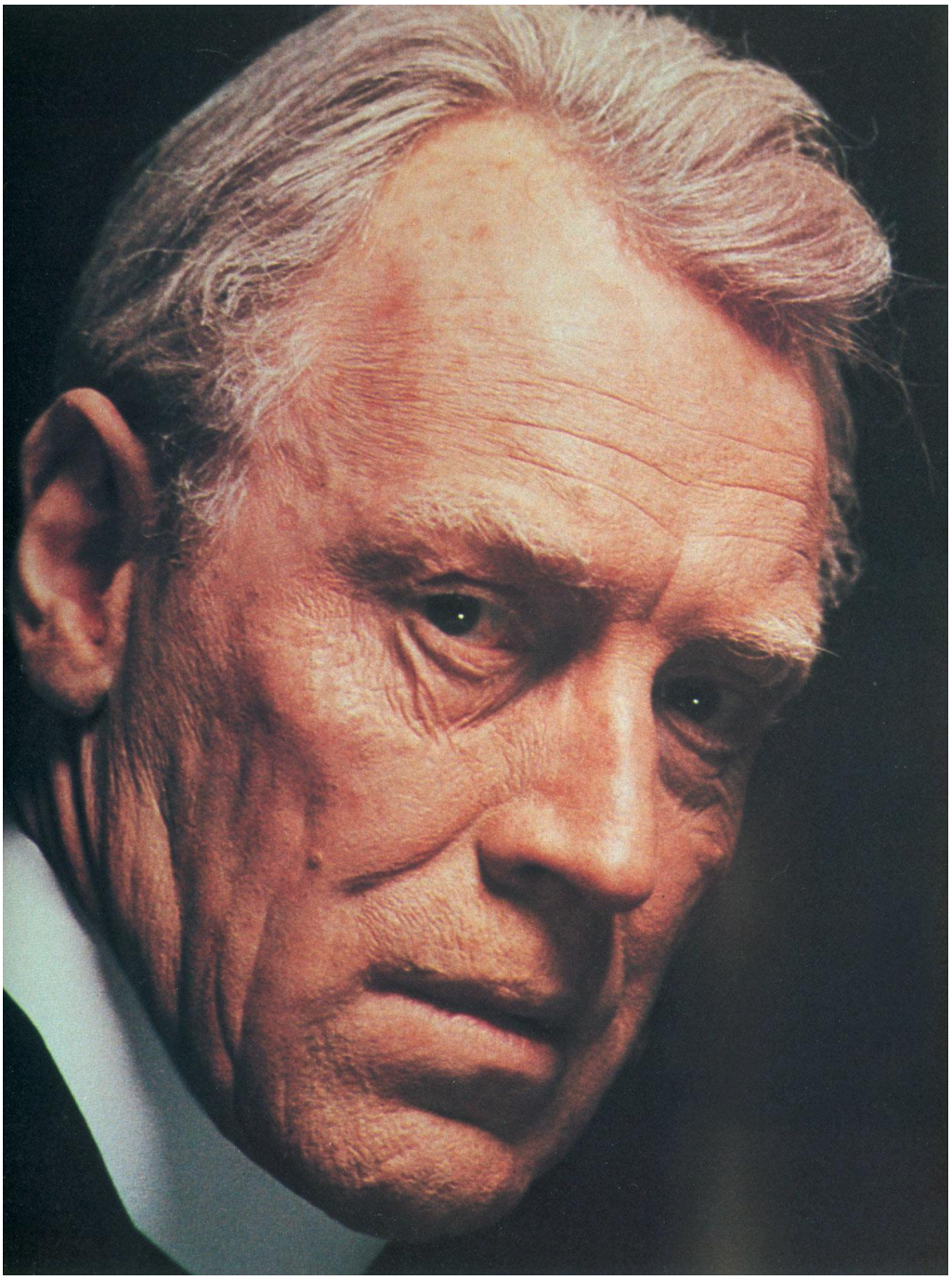
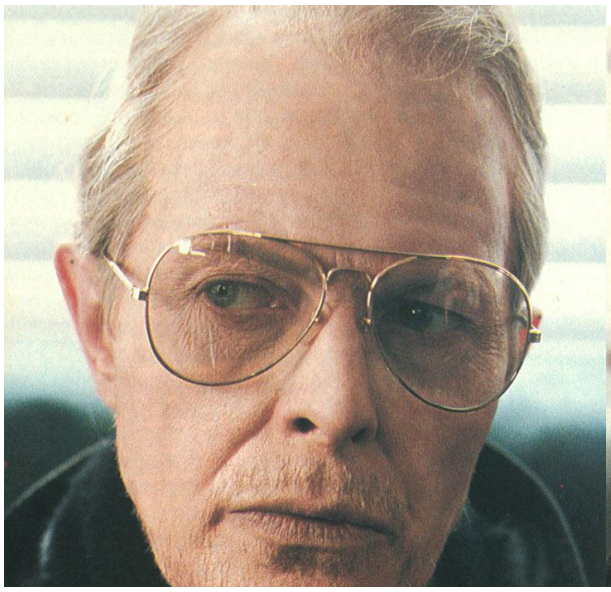
learned from the on-set makeup artist in England that Scott had asked Bowie to grow a five o'clock shadow for a scene leading up to the first stage of his aging. This was obviously not going to cut in well with Smith's smooth-shaven facial appliances. "If I put jowls on him, I was going to have to put stubble over the jowls; and I couldn't do that over rubber mask greasepaint. I called Tony Scott and asked if he couldn't get rid of the stubble because it was going to complicate all of the makeups, and he said, 'Sure, no problem.' But I know directors and I know everything they have on their minds, and I just had a feeling that I was going to have to deal with this stubble. So I started looking for ways to adhere stubble to the appliances. I had found a new medical adhesive, developed for prostheticians to put on silicone appliances for people who are missing an ear or something like that. It's called Pros-Aide. It is an acrylic emulsion that dries and leaves an incredibly sticky film. Being an emulsion, it just has water in it — there is no volatile solvent or anything. I tried it out on my own hands and the stuff was impervious to everything. Not only did it not come off, it was very thin and light — so it remained flexible and didn't cause a crinkle in the skin. I mixed it with regular Liquitex paint, which I had been using for some years as an appliance paint, and the combination produced a fabulous result which I named PAX — 'PA' for Pros-Aide and 'X' for Liquitex. It sticks to the skin and it sticks on latex, yet it is easy to handle. Its only drawback is that it has to be powdered to take away the tackiness; but if you use translucent powder, it hardly changes the look of it at all."

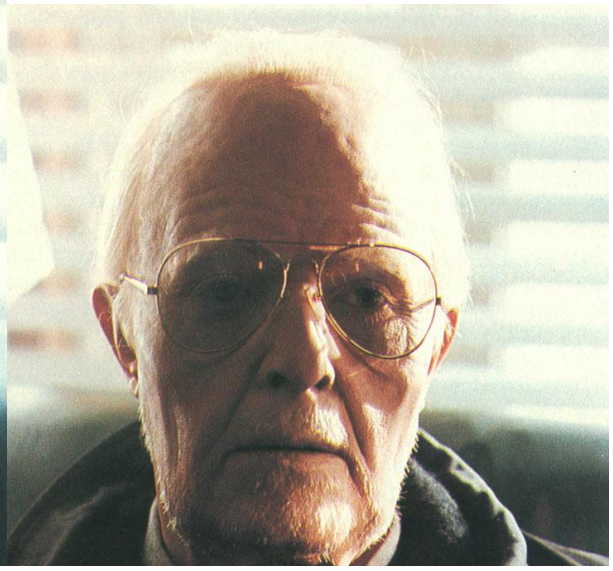
Mixing up an array of colors of his new PAX paint, Smith headed for England where, sure enough, he found David Bowie with a stubble beard. "The first scene where I had to do David and put jowls on him, I used this PAX to cover the appliances. Then I took a matted silicone adhesive, which I've used for putting on stubble beards, and I painted right over the paint and applied my stubble beard. It was beautiful — what a breakthrough!" Bowie's first aging was to take him to about fifty years old — an illusion created by the application of small jowls and raising his hairline to accommodate a toupee that Smith had prepared. "When I got there, I found they'd bleached his hair so the hairpiece I'd brought for 'stage one' was too dark. Consequently, I ended up using the 'stage two' hairpiece — which was lighter and grayer — for both stages of the aging because it matched his bleached hair better." Smith designs his own hairpieces, but leaves their actual construction to Bob Kelly's wig company in New York. After the wigs and hairpieces are made to specification, Smith then cuts and dresses them and takes care of any final touches that might be necessary.

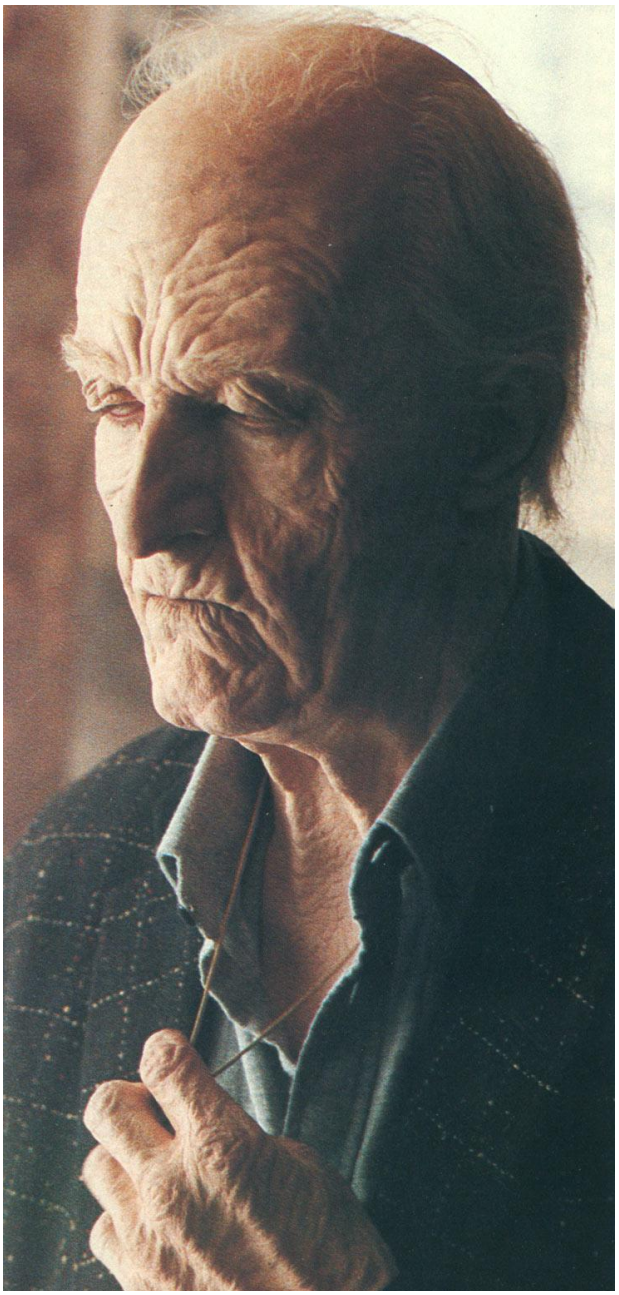
The stubble that he was now able to apply to the foam latex pieces proved to be a great success in establishing a realistic aging look for the first three stages, which ran from age fifty to seventy-five. "The stubble gave it a lifelike quality that every-











helped — stubble camouflages that latex skin which, even at its best, just isn't the real thing." Applying stubble is a tricky procedure requiring meticulous preparation of materials beforehand. Smith starts with yak hair or coarse human hair, which he runs through a crimper. "I then cut the hair very precisely and I wind up with all of these short S-shaped hairs that are the same length and hang together in little balls. After putting silicone adhesive on the skin, I gently press that ball of hair against the tackiness of the adhesive and pull away, leaving some of the hairs stuck in the glue and standing pretty much erect. I repeat this process of patting the ball on different areas of the face until it is covered. It is best to use two colors to give a more realistic result."

More appliances were added to Bowie's face with each transition until, by the third stage of his aging, his entire face was virtually covered. Since foam latex appliances are generally good for only one application, each appliance was made in sufficient quantity for several days' shooting. Included among them were blinking eyelids he was able to generate from his original *Little Big Man* molds for use during Bowie's fourth stage of aging. In addition, the fourth and fifth stages required the application of rubber pieces for the backs of his hands, which took up to thirty minutes to apply.

By the end of the sequence, Bowie was completely bald. "I had created the bald effect on Dustin in *Little Big Man* by making two overlapping appliances that were joined together prior to being applied to the head to make a complete skullcap. In Bowie's case, I built up his head too thick to make that technique work. With the help of an excellent mold maker, I devised a way of molding an entire foam latex bald head with a core that could be broken away or disassembled and removed from the negative. That way, the positive part — which normally would not come out because of the undercut — could be extracted so we could get a one-piece appliance without seams. Other people have used the same technique since, but I think *The Hunger* was the first time it was done."

Adhering to his belief that the body must be aged along with the face, Smith went so far as to have appliances attached to Bowie's upper leg so that when he sat down it would appear that he had thin cadaverous limbs under his pants legs. "The costume designer helped me by giving him a knitted suit that tended to be form-fitting. Instead of seeing the healthy thighs that Bowie actually had, what you see is the illusion of knobby knees and spindly legs. And of course, we gave him a belly pad to add to the effect."

The next film to require Smith's expertise would prove to be the most celebrated film of 1985. Winning several Academy Awards — including best film, best actor *and* best makeup — Milos Forman's *Amadeus* was a lavish screen adaptation of Peter Shaffer's critically acclaimed play. The story is a fictional

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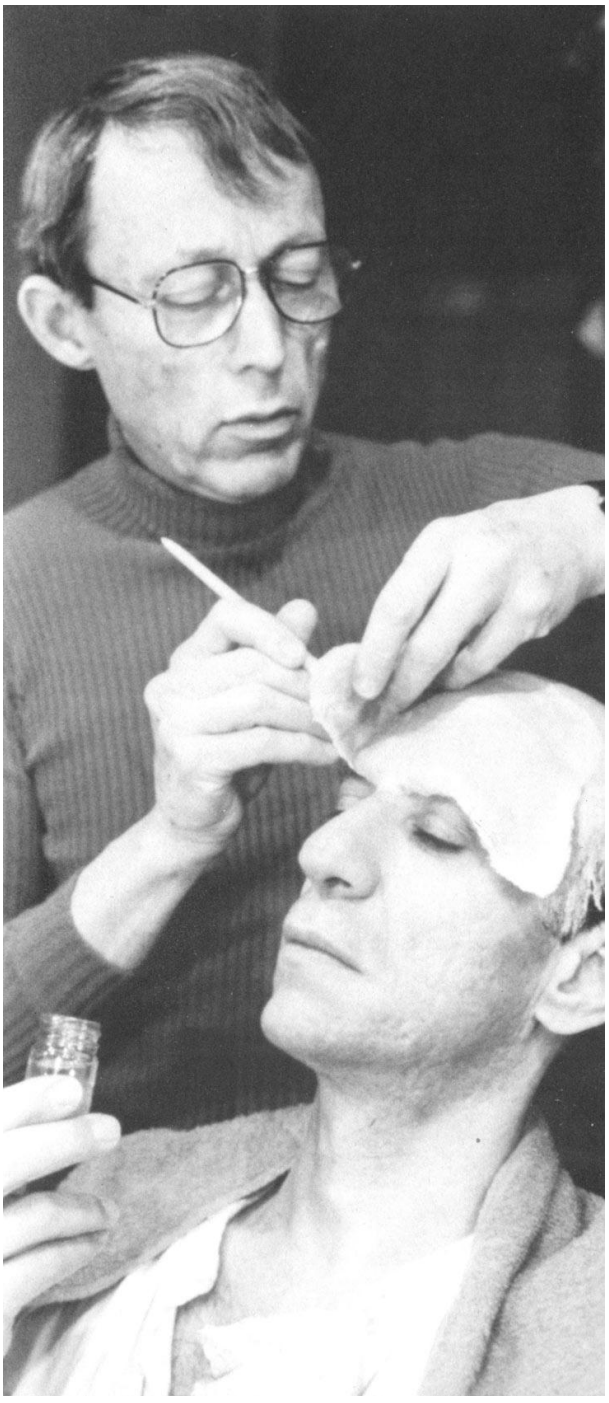
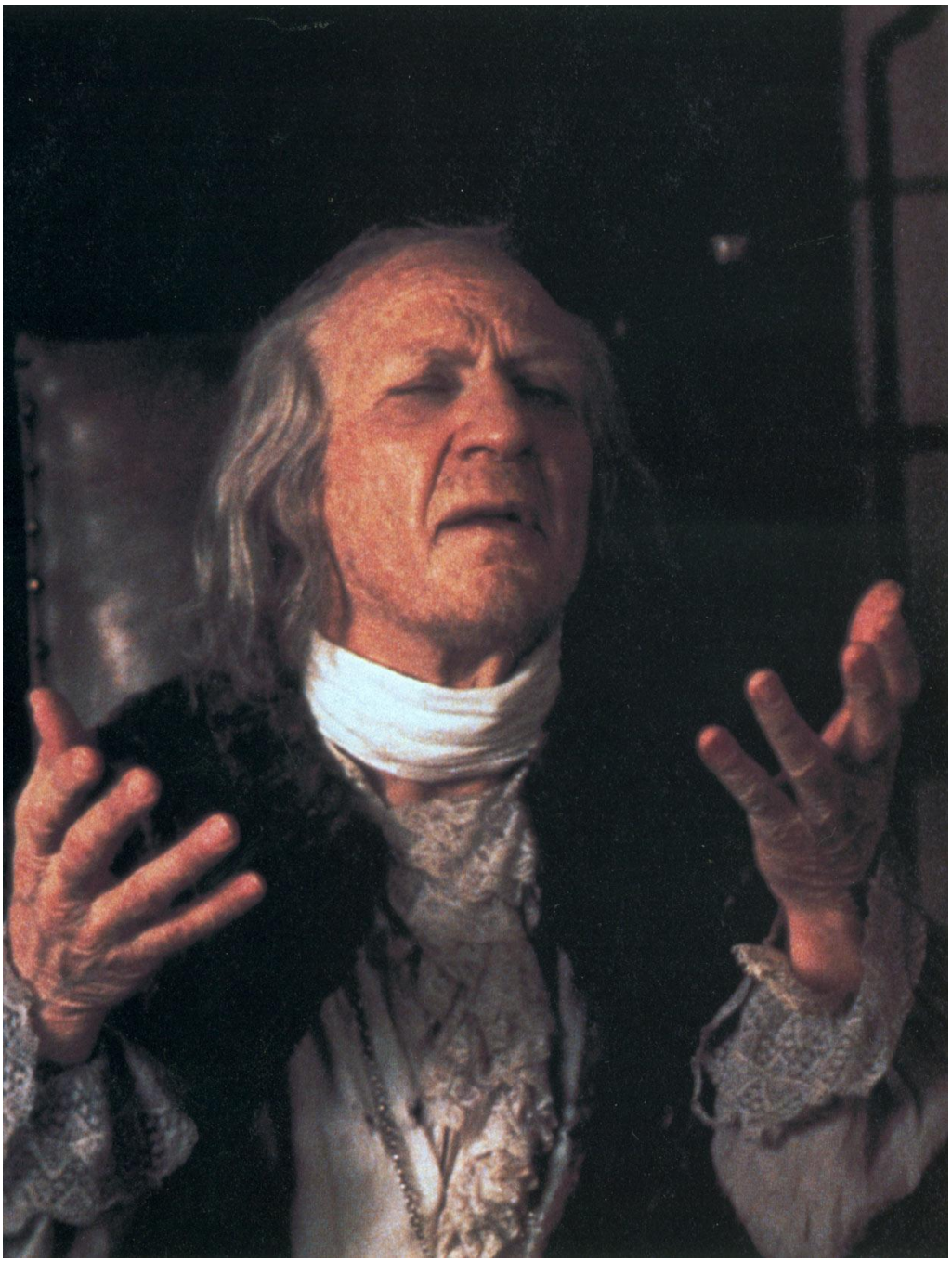
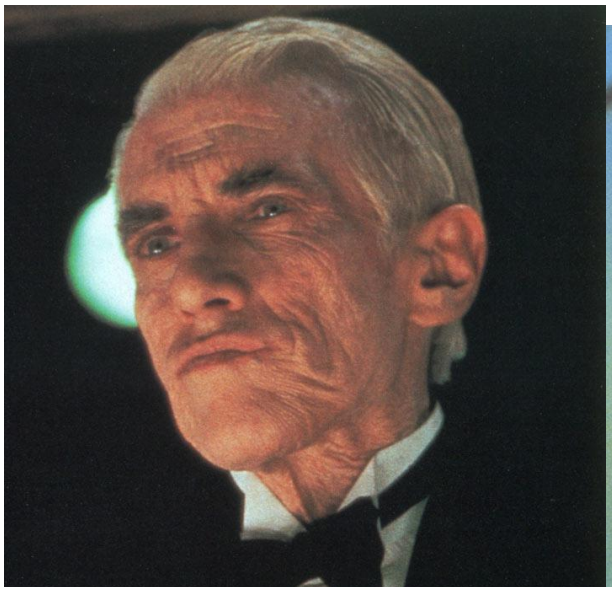
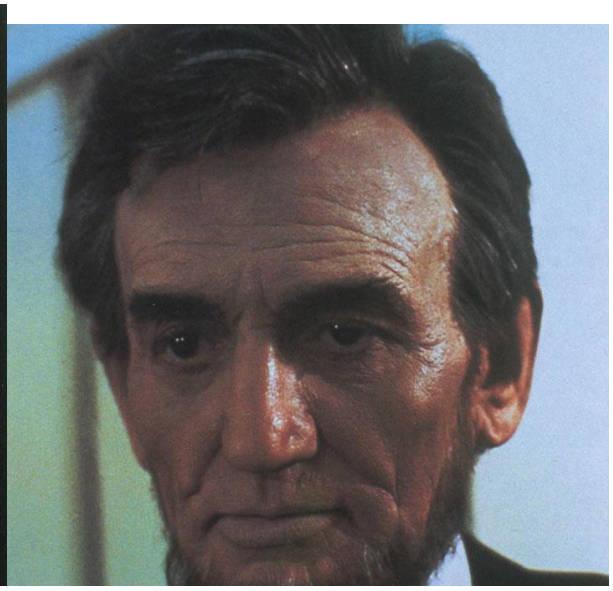


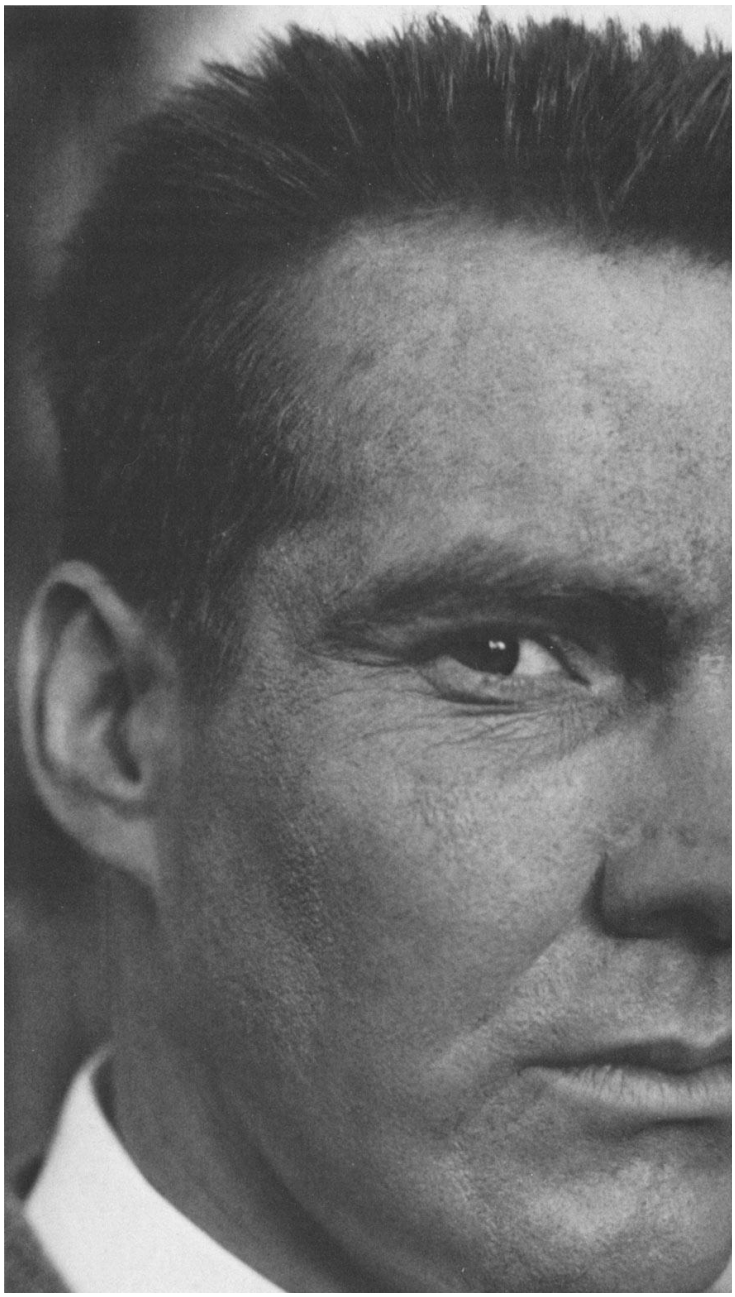


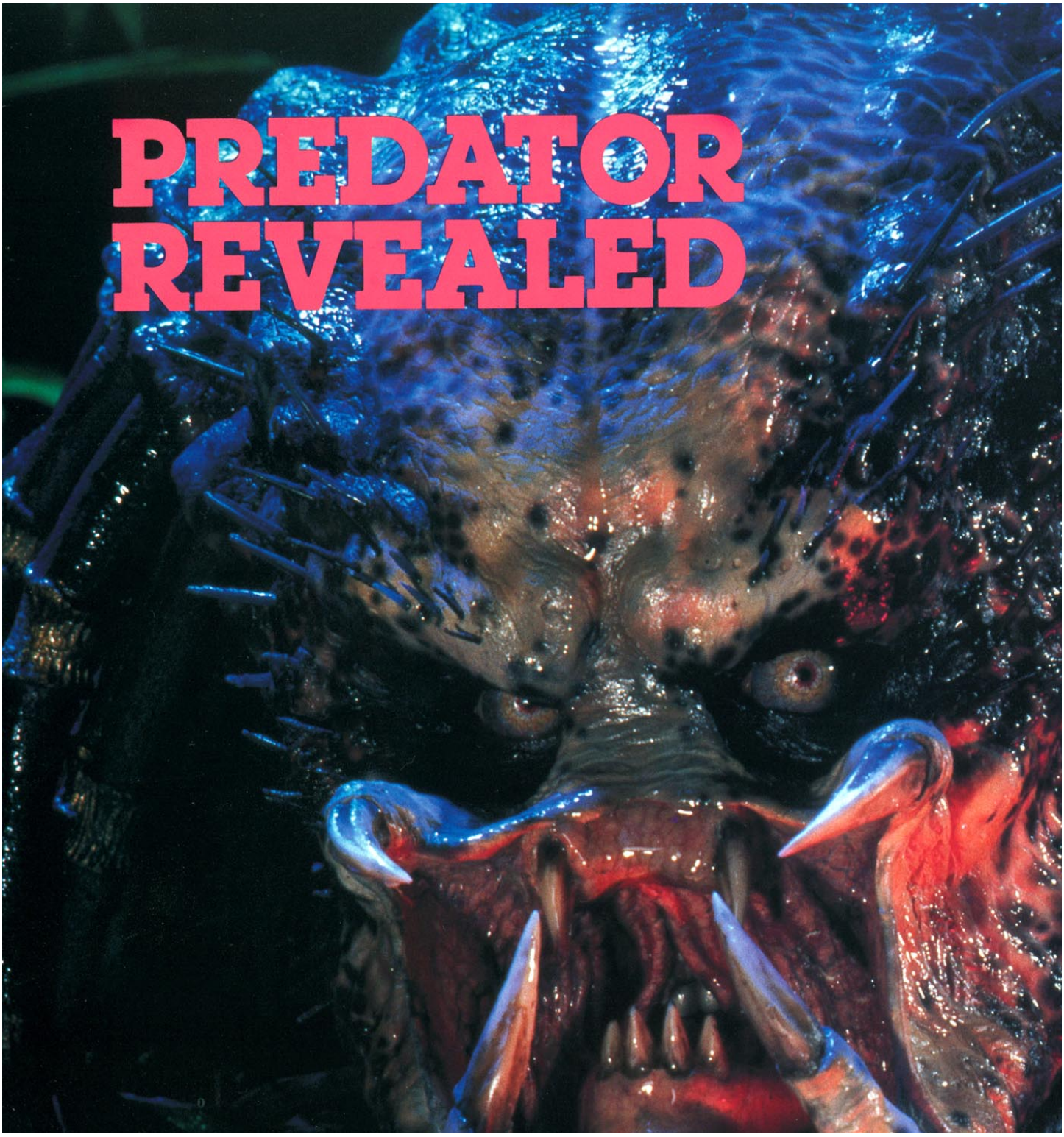




will, I think — to achieve greater and greater realism. Obviously the artistry of sculpture and coloring will always be of prime importance, but the area where we always have room for improvement is in the technical things. There have been vast improvements in our material for appliances — foam latex formulations have improved greatly in just the last ten years. In fact, I just learned of a new improvement which I think is quite wonderful — it's a way of handling a very high volume foam that is beaten up until it is like fluff. Usually when foam is beaten up that much, it is impossible to pour. You can inject it into molds; but when you do, you may also inject huge pockets of air and you wind up with a lousy piece. This problem has been circumvented somewhat by the invention of injecting guns that are not top-loaded, but bottom-loaded. The nozzle end comes off, the gun barrel is placed in the pot of foam; and by pulling up the plunger, it sucks the foam up into the gun. Even that method has its problems, however, and those guns are very expensive. Now I just learned last week that there is a new formulation of a foaming agent that will give you top foam and at the same time keep it pourable and flowing. I think that is very exciting and it opens up a number of possibilities. It will certainly make it easier to get detailed appliances.

"I also learned last week that Dow Corning is putting out a new medical adhesive. New adhesives are enormously exciting. It is my discovery of the two most popular adhesives in the business now that has almost totally eliminated the use of spirit gum and allowed us to get far more security with our appliances. I have also recently improved my own PAX paint by introducing a wash medium into which I can incorporate any transparent color. When the stuff dries, it is waterproof and I can paint additional washes over it and still see the original color coming through. I can build it up, adding layer upon layer of these glazes that give a depth and color quality that is very special. It is a real breakthrough in color in makeup. So those are some of the things that have happened and are happening — and I fully expect that there will be more of that sort of thing. The fact that we are now playing around with gelatin which was an old material may lead to other possibilities. Who knows what's going to turn up in the next year or next ten years? I'm sure new materials will be discovered, new techniques will be developed and makeups which today are considered marvelously realistic will get even more so. One of the things that may necessitate this is that film quality itself is improving. Showscan, for example, reveals incredible detail — so much so, in fact, that it would be impossible to use our current appliance makeups in a film employing that process. Sooner or later, someone is going to want to do makeups for Showscan or similar film media — and as makeup artists, we're going to need to address those challenges. So there is really no end to this business — there are always ways in which you can make

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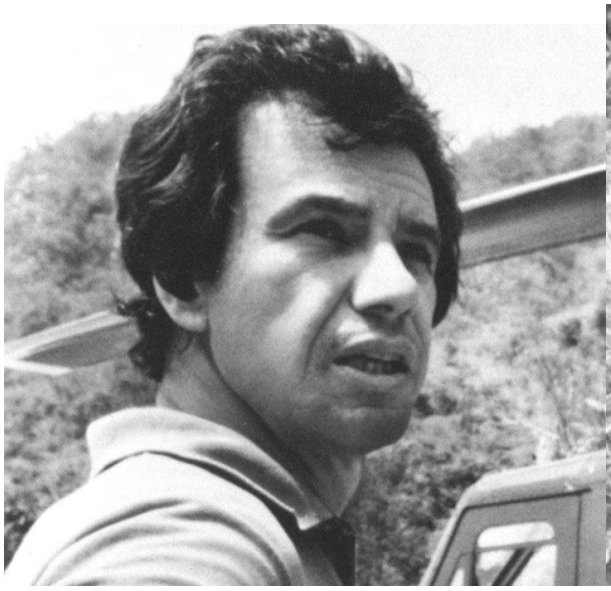

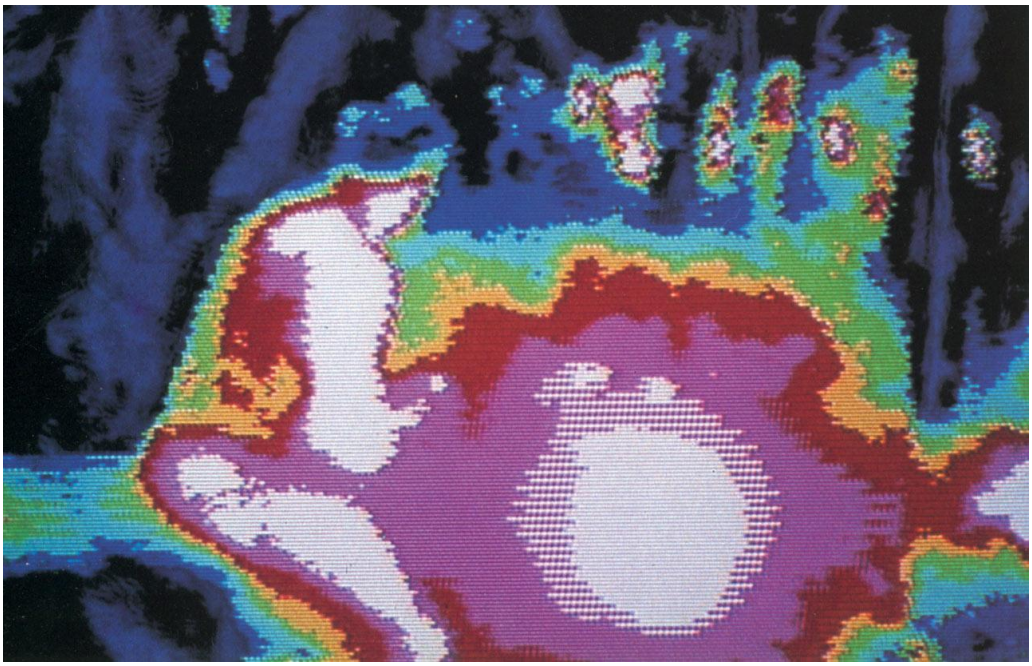

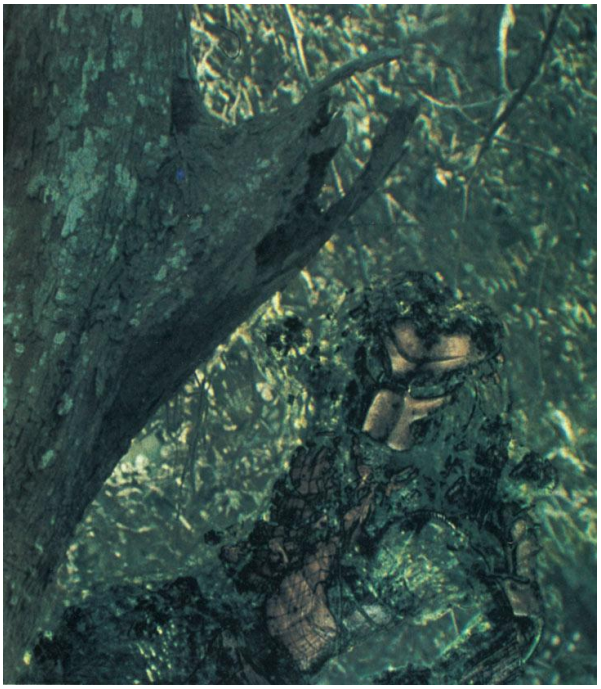

into the thermal scanner and then into a gray level digitizing box. At that point, different color levels would be assigned to the image creating an ersatz infrared effect. Displayed on a video monitor inside a truck, the material would then be recorded on film by another Panavision camera. "For the predator's point of view," Joel Hynek elaborated, "we considered several techniques. One was posterization — similar to what Rob Bialack had done in *Wolfen* — but that didn't resemble real heat. We then tried to paint with ultraviolet, but it looked too ungainly. So we came up with infrared because it sees a different spectrum on each person according to the heat he or she emits. We had heard of an electronic scanner made by Inframetrics that puts out a video image. We went to three different companies and compared them all. Inframetrics was the only one that divided up a real body into many color contours. The trick was to make color film see it the same way. So we used a thermal camera *and* a film camera and developed a beamsplitter to record with both simultaneously. In this situation, the thermal camera worked best when the mirror was as fully coated as possible, so we went with a 70/30 ratio of reflected transmission. The film camera did not require as much light — especially since we were using 5294 high-speed stock."

A special mount for both camera and beamsplitter was developed at R/Greenberg by Eric Chamberlain and Panaglide operator Ted Churchill. The mount worked admirably in the Manhattan facility; but in the steep jungle terrain, it proved a bit cumbersome. Behind the Panaglide operator was positioned a thermal camera operator carrying a pack consisting of an encoder and a video monitor. Behind *him* was a caravan of six men stringing up to three hundred feet of power cables for video and for film-to-video synchronization — all this in sweltering Mexican heat. "We shot at thirty frames per second," Hynek continued, "because the thermal scanner is essentially a video image. We synchronized it up with a Panavision field-to-frame synchronizer, and this image then went to a high-resolution video monitor in a nearby air conditioned truck where it was photographed on film simultaneously by Dave Satin. The heat image was basically a black-and-white representation of the actors, digitized on the spot by the Inframetrics encoder box into color levels of red, green, yellow and orange. We picked a very simple color palette, which art director John Vallone had designed. What we ended up with was a film image of subject and background, and a heat image of the same."

Because the jungle vegetation registered as multicolored thermal images *with* the actors, the idea was to isolate the 'thermalized' actors and composite them onto a bluish jungle plate. The material was sent to Los Angeles where it was scrutinized by visual effects editor J.W. Kompare. Since it was impossible to get away from the video-scanned look of the thermal

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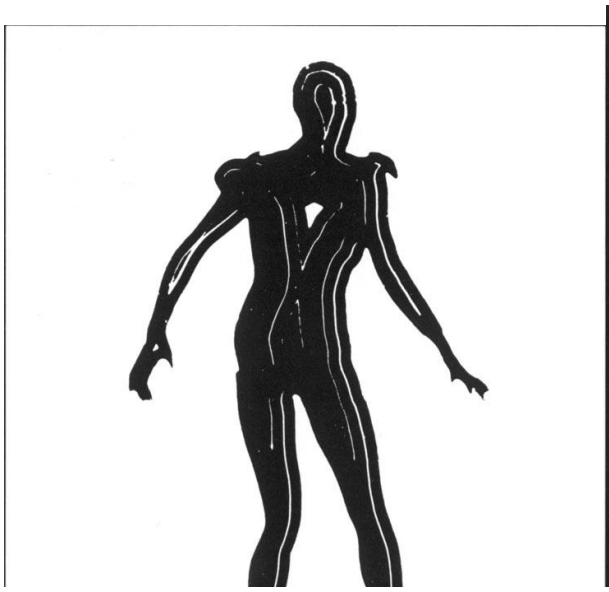

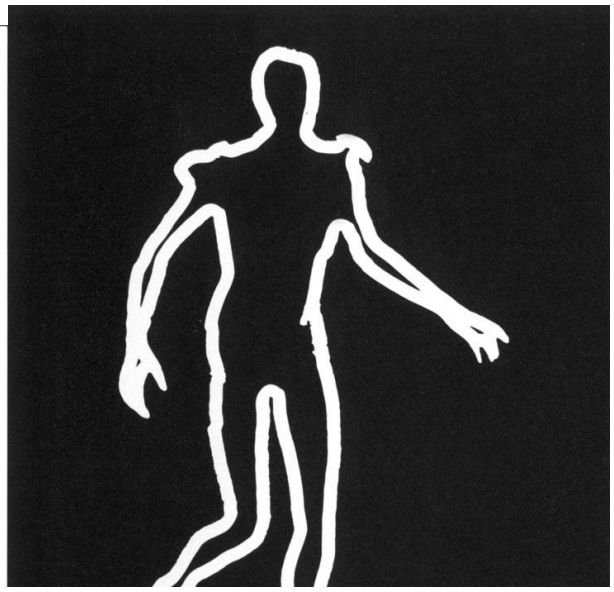

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so they decided to pursue it. We never knew for sure if we'd be further involved in the visual effects."

Boss Film was dropped from the project and the script underwent budget cuts. Rethinking the creature began with the producers putting out a call for a new designer. Rick Baker was contacted again and put in a bid. So did Robert Short Productions. Others did likewise. Eventually Stan Winston — fresh from his success on *Aliens* — was hired to recreate the monster from scratch. Extrapolating from some preexisting concepts, Winston and his crew spent the next six months fabricating a more ferocious looking humanoid entity. The buglike head now had tusks sprouting from its mandibles, deep-set eyes and rows of sharklike teeth. Fishnet covered the alien's body. To heighten the impression of extraterrestrial intelligence, the original concept was melded to scientific gadgetry. Air tubes were attached to its breast to suggest barometric compensation, a computer-display wristwatch contained a detonating device and a removable visor helmet finished the costume. The thermal vision scan lines could now be explained as machine-induced.

Returning to New York, Joel Hynek and Eugene Mamut began experiments on an optically-created camouflage effect. The red-suited monster and the background plates shot in Puerto Vallarta provided them with enough material to devise a specific image. Initially there were two concepts under consideration. One was the predator as a mirror effect. The other was patterned after a Fresnel lens — a flat-surface lens employed in overhead projectors and automobile headlights which is characterized by a series of concentric facets. The latter idea seemed most appealing to Hynek as the background could be seen behind the creature. "Our first tests had been shot at the Arboretum with a red-suited figure. Even though red is the lowest gamma on the negative — making it the worst color for mattes — we had no choice but to use it since we were shooting in green foliage and with a blue sky. We shot a normal background and a thirty percent wider background and then generated a silhouette matte of the red creature. The question was how to combine them to make it look magical. Some experiments looked promising. We put in a diffused wider background and a partial double exposure of wide and normal plates, but it still looked like what it was. We tried updating the interior image with a series of freeze-frames. On every tenth frame, the predator would match the background precisely and become virtually invisible. That *too* looked exactly like what it was. Eugene tried fiddling with a slitscan 'elastic' effect he had used in our Renault car spots. The technique can distort an image very smoothly, but it just wasn't right for the predator."

The answer lay in breaking up the creature's silhouette into lots of concentric inline mattes — 'inline' as opposed to 'outline' — and filling the silhouette's interior with many config-

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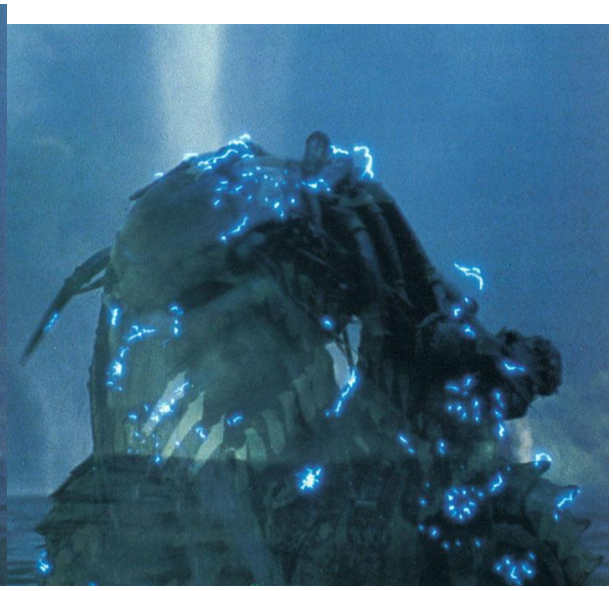
at all." To bypass the need for motion control, Hynek developed a system of employing video tape recorders coupled to the cinematographer's camera. "We called it a 'manual repeat pass' — the idea being that we'd record a reference move of the red predator moving against the background on videotape. A time encoder provided by Panavision told us how long the take was and where the key points were located. We'd do the shot again *without* the creature and play back that reference move on one of the decks. Then we'd record on the other deck and see the move we were currently doing on the monitor. Thus we could watch them as they were being shot to determine how close they were. For panning shots of the red predator, the camera was being dollied on a track. Other times it was simply panned. The video camera was hooked up to the film camera's viewer. It was a low-grade image, but it was seeing exactly what the Panavision was seeing."

In March, Eugene Mamut began rotopositioning the various takes for the camouflage effect. Unlike ILM's method of match-moving elements by plotting points on a Moviola screen, everything was done on a front projection unit linked to the CompuQuad printer. Typically, selected takes of the moving predator and corresponding moving jungle plates were examined frame by frame and positioned. Code numbers of these takes were input into the CompuQuad's computer memory. Once the roto move was programmed and dry-run, any incorrect areas were refined as necessary. When it came time to composite, the file would be called back and the aerial image would move to those positions, just as it had been programmed to do. The beauty of the system was that it did not cost a generation to obtain the proper match.

Predator used three matting situations for the camouflage effect. Whenever the creature had to react with the environment, the red suit was used on location. For shots requiring grand acrobatics, the red suit was shot at a Hollywood stage against black velvet. In either case, a difference matte — or red separation — was pulled. In addition, bluescreen was used for the first camouflage transformation to the full predator suit, the pre-optical action having been photographed by a crew from the Howard A. Anderson Company using a backlit blue screen.

"After we left Palenque," recalled Joel Hynek, "we spent a week in Los Angeles filming a stuntman in the red suit, making him match high-vantage shots of the predator jumping fifty feet. We scaled all the shots down via focal length. If we used a 100mm lens previously and we were a hundred feet away, now we used a 25mm lens and were twenty-five feet away. The stuntman was usually suspended by safety cables and leaped off a perch. Since the goal was to get just a silhouette, we could get away with any mismatch in focal length. Eugene's rotopositioning program enabled us to get a good correspondence between



He would do anything, no matter how much it hurt his crotch area! Brian was doing motions I didn't think anyone would permit his body to do, leaping off scaffoldings onto other levels with this strange body harness."

The first three predator camouflage shots appear in quick succession. As Dillon (Carl Weathers) aborts an escape attempt by a young guerrilla operative (Elpidia Carrillo), the creature attacks fast and furiously. Each optical in the sequence contained different numbers of concentric interior plates put together with both soft- and hard-edge mattes. The result, though inconsistent, was intriguing — the predator resembling a jellyfish, a convex glass man and a ridged lizard all within thirty seconds of screen time. "At first the producers hated the dividing lines," Hynek revealed, "then they loved them. We had done some magnificent takes where the lines were sharp, but there were also differences of opinion between John McTiernan, Joel Silver and me. As the movie progressed, they decided to give the predator a sharper look, which killed the jellyfish effect that I favored."

Interestingly, the first *intended* series of camouflage shots — in which the mirage-like predator, with yellow glowing eyes, was glimpsed curling in a tree — were deep-sixed. The producers thought it looked too much like Casper the Friendly Ghost. A more complicated follow-through shot had a butterfly lighting off the creature's arm. The insect was shot against a blue screen, immobilized first on dry ice and stirred to life with a rod. That element was rotopositioned to the predator's arm, the idea being that the butterfly's after-image would demonstrate the camouflage effect. Hynek wanted to do concentric mattes on the butterfly and have them 'readjust' themselves. "That was the original plan. But the producers said: 'No concentrics on the butterfly — just have it fade off.' We complied with their wishes, but then they said it looked too much like an optical. Unfortunately, there was no time to finesse it. The feature was running long, so it was booted out."

In a subsequent attack, the predator grabs Hawkins' leg and drags him feet-first into the jungle. The scene was done in two cuts, with actor Shane Black's leg being filmed in Puerto Vallarta and the creature being shot in Los Angeles, then rotopositioned by Eugene Mamut in New York. In this case, the beauty suit was filmed against a blue screen, a silhouette was pulled and thirteen concentric mattes were generated for its interior. The follow-through cut of the drag-off was also a plate salvaged from the Puerto Vallarta shoot. Getting the separate images to seemingly connect was tricky. As an illustration of how time-

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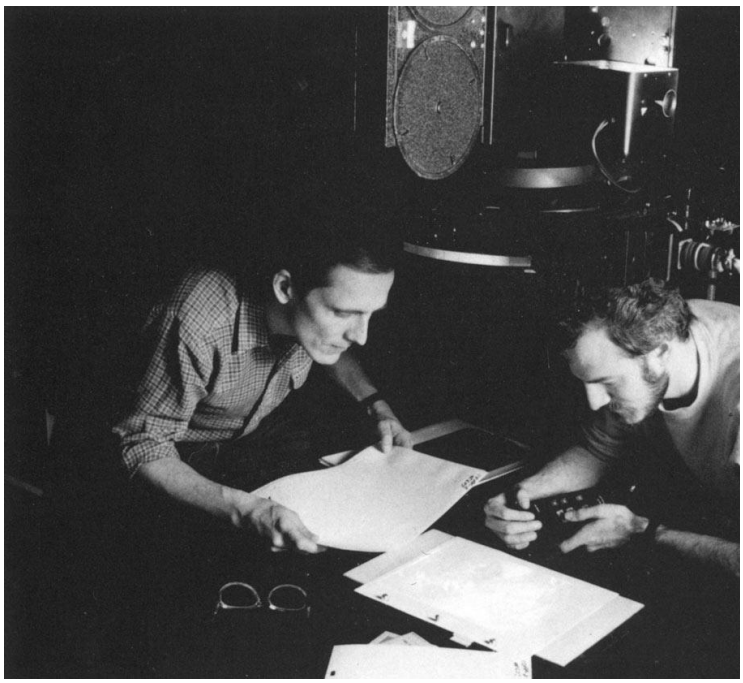
Dramatically, one of the problems with *Predator* was its lack of a suitable setup establishing the creature's jungle presence. The brief outer space preamble supervised by Dream Quest's Michael Bigelow showed a flaring projectile descending upon a Robert Scifo matte painting of earth. Though well done, the idea of the craft veering off course does not really register. The original script, however, had described a jungle landing with a number of shots set to reveal the spacecraft and explain what its pilot was up to. Since the premise was that the alien was an interstellar big game hunter, the ship's interior would have shown a collection of galactic trophies, skulls and hanging skins. Also planned was a major spacecraft design depicting the creature's operational quarters, which would have exploded in the end. The rewrite — prompted by economic concerns — substituted a black humor detonation scene with Schaefer escaping the holocaust in the nick of time.

Despite these omissions, *Predator* succeeded — perhaps unknowingly — in recapturing the ambience of fifties horror films set in exotic locations. Potential victims sweating it out in a hazardous environment recalled the queasiness of *The Creature from the Black Lagoon* and even *It — The Terror from Beyond Space*. What *Predator* lacked in logic was redeemed by action, suspense and an absolute lulu of a monster. From the producers' perspective, the film was clearly an Arnold Schwarzenegger action vehicle rather than a special effects movie. Even so, the folks at R/Greenberg lamented in retrospect about demanding but not getting such requisites as storyboards, a solid effects breakdown and other standard items of effects preproduction. Their only consolation was the allotment of decent time and money for research and development. "We've always wanted to work on more feature films, but never had the opportunity," voiced Robert Greenberg. "Being located in New York hasn't helped. We would usually do eight scenes in a movie and get an opticals effects credit or second unit. Our real capabilities here — which still have not been realized fully for a feature —



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